THE

ORIGIN AND PROGRESS

OF THE

MALIGNANT CHOLERA

In Manchester,

CONSIDERED CHIEFLY IN THEIR BEARING ON THE

CONTAGIOUSNESS

AND THE

SECONDARY CAUSES OF THE DISEASE.

TO WHICH ARE ADDED SOME

REMARKS ON THE TREATMENT.

WITH AN ILLUSTRATIVE CHART.

BY

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La Natura ama di essere conosciuta, ma è gelosa di essere capita.

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THE ORIGIN AND PROGRESS

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MALIGNANT CHOLERA IN MANCHESTER.

Some months have now elapsed since the town of Manchester became free from cholera, and yet no account, however imperfect, of its first visitation of the capital of the manufacturing districts has been made public, even in the medical periodicals of the day. The repugnance to write on a subject so exhausted is natural, but it would, perhaps, cast a reflection at least on the zeal of the medical practitioners of this town, if the future historian of the most extraordinary epidemic that has happened for many generations, should find abundant materials illustrative of its course through almost every obscure village in Great Britain which it has visited, but no authentic record of its appearance in this most populous and important place. The visitation, it is true, has been happily far more limited and far less destructive than had been predicted. An inspection of the town, conducted under the orders of a well-organized Board of Health, whose sittings began two months before the out-break of the disease, had disclosed in the quarters of the poor—a name

that may be almost taken as a synonym with that of the working classes—such scenes of filth, and crowding, and dilapidation, such habits of intemperance and low sensuality, and, in some districts, such unmitigated want and wretchedness, that the picture of the 'moral and physical state' of the poor, which an active member of the Board subsequently drew, deriving some of his darkest colours from this inspection, seemed to the minds of many among the more easy of the inhabitants as little less than a malicious libel on the town. From that picture it was certainly to have been expected that nearly the whole mass of the working population would have been swept away by the disease. The comparative mildness of the invasion, however, far from lessening the interest of the inquiry, increases it. Can any reasons be assigned why a population represented to be sunk in the deepest poverty and immorality, should have escaped on such easy terms; why a soil so seemingly favourable to the pestilence, should happily have yielded so scanty a produce of victims?

Though the Manchester cholera has been far more confined in its ravages than was foreboded, they have, nevertheless, been sufficiently great and sufficiently durable to furnish a series of very interesting illustrations of the way, or rather ways, in which the disease spreads, and of the secondary causes which principally promote its dissemination. The investigation of these causes cannot be success-

fully conducted without both trouble and address. Little information can be obtained from the patient himself, if he be not seen early, or after recovery; nor is it amidst the anxieties and painful excitement of a Cholera hospital, where the first and only consideration is, what can be done for the sufferer, that the facts which bear upon the history of the disease can be ascertained. The poor, too, are habitually inexact: they omit, from stupidity, the most essential point of an inquiry, unless led to it by a direct question; or they answer as they suppose you wish them to answer; or else they wilfully deceive; nor is it difficult to imagine many powerful motives for concealment or falsehood in such an investigation. It is often, in short, only by a separate examination and cross-examination of the patient, relations, and neighbours, managed with all the astuteness of a lawyer, and that too, after the first alarm has passed away, and the tranquillity of the house or neighbourhood has been restored, that the true particulars of the origin of any individual case can be correctly learned. Nor are the poor the only deceivers. The inquirer is himself, from an unconscious bias, not seldom in pursuit less of the truth whatever it may be and wherever it may lead, than of some preconceived opinion or exclusive system. He is a contagionist, and puts but one kind of question, or hears but one class of answers: he is an adversary to contagion, and interrogates only on localities and miasm.

I examined the first three hundred cases that occurred in this town. They form in my notes an unbroken consecutive series, and it was my intention to have comprehended them all in the tables which are placed at the end of these remarks, had I not been deterred by their voluminousness and the large space they would occupy. It is on this account that I have satisfied myself with the publication of two-thirds of the whole number. They were collected, at least, with a mind perfectly aware of the errors and fallacies to which the enquiry was liable, from the sources to which I have just adverted. As the epidemic at first proceeded slowly, time was allowed to keep pace with its progress, but after the three hundredth case, the numbers that fell sick daily outstripped my utmost diligence, and I contented myself from that time to the termination of the epidemic, with a general knowledge of its history. These three hundred cases, however, carried it into almost every quarter of the town, and the remainder, had it been possible to trace them with equal minuteness, would have, in all likelihood, presented a mere reiteration of the same examples, or at all events a very close resemblance to them in the general results. The statements and observations which precede the tables are to be regarded chiefly in the light of a commentary on the classified cases, although I have not scrupled, at their very outset, to make one digression into the general history of the disease, because this digression relates

to a particular question of great importance, which deserves a more attentive consideration than it has hitherto received.

Origin of the Epidemic :—First Cases.—Considering the extraordinary and almost unlimited incourse between this town and the rest of the kingdom, and that cholera in the Spring of 1832 was already prevailing in the north of England, in Scotland, in London, at Goole situated on the great water-road between Liverpool and Hull, at Belfast and at Liverpool, its arrival here by some of these various channels was hourly expected. The influential members of the Board, most of them, I will not say ultra, but determined contagionists, deemed it especially impossible that Manchester should escape the contamination of Liverpool, where the disease had broken out on the 25th of April,[a] and this was the general impression.

Mantua væ miseræ nimium vicina Cremonæ !

Their despair of being able to repel the introduction of the disease, was evident from the entire disproportion between the end to be accomplished and the means contrived for its accomplishment—a disproportion which, but for the calamitous nature of the subject, might excite a smile. Two inspectors were set to watch the canal-boats—a feeble array

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[a] See Dr. Collins's Letter, Med. Gaz. vol. ii. p. 142. The disease was not officially reported till the 12th of May, although fifteen cases had occurred before that date.

against an enemy that had the credit of having overmatched the armed cordons of Austria and Russia. At the same time the tramper was allowed to walk into the town unmolested, and the coaches, of which at least a hundred arrive daily, and the rail-road, which, at that time was pouring in, weekly, a tide of several thousand passengers, were left at perfect liberty to import what and whom they pleased. A calculation of the number of sentinels necessary for a rigorous examination into the previous movements and bodily health of the rail-road travellers alone, even though each sentinel had been an Argus, showed the vanity of any attempt to close this ingress, and the Board, resolved on doing something, seem to have copied the example of the country gentleman described by Addison, who thought to keep out the crows by nailing up his park gate.

When, however, the disease was at length announced, its appearance could not be imputed to the inadequacy of the precautionary measures adopted by the Board. Whatever these measures had been, the same result would have followed, for the coaches did not bring it, and it neither sailed here nor glided suddenly into the midst of us, propelled by the force of steam. It arose upon the spot. On Thursday, the 17th of May, James Palfreyman, aged 29, a coach painter, who lived in Somerset-street, Dole-field, began to complain of nausea and pain of the bowels: he was seized at midnight on Friday, with the characteristic symptoms of cholera, of

which a clear and minute description made from notes taken at each visit, was forwarded to the Board of Health by Mr. Stephens the surgeon, for whose advice he applied. He died on Saturday afternoon the 19th of May, at half-past two, in Coronation-street, Salford, having been unthinkingly removed there by his family who were changing their residence. No symptom during life, and no appearance after death was wanting to mark this for a genuine case of malignant cholera. Palfreyman was a fine, stout, well proportioned man : his house was not crowded : he was earning comfortable wages : the street where he lived was, in comparison with others, moderately clean and open. On the other hand, there was nearly opposite to his house a large dunghill attached to some extensive stables, (Wright's,) and Palfreyman had often complained of the fœtor which issued from the base of the wall behind which it was placed. Though his health was in general good, he had had repeated attacks of painter's cholic ; was subject to severe diarrhœa on taking weak acids ; was an occasional drunkard ; had been drunk the Tuesday night preceding the attack, and had eaten on Wednesday at dinner heartily of lamb's head, and what are called here the appurtenances, the liver, heart, &c. He had never been well after this meal. It was established by the most diligent inquiry, that Palfreyman had had no communication, direct or indirect, with any infected person or thing.

The first case of cholera in Manchester, then, was not imported. Nor ought this to be a matter of surprise. The local and spontaneous origin of the disease accords, if you except some rare instances, with its history both at home and abroad. Notwithstanding the contrary impression which so generally prevails, nothing appears to me to be better attested in the records of this epidemic, as nothing is more remarkable, than that, while it is undoubtedly communicable from man to man, its dissemination over so large a part of the habitable globe has been on the whole effected without contagion, by the successive springing up sometimes in distant but more commonly in adjacent places of the poison, whatever this may be, that causes the disease. The more rigorously the evidence is examined, the more will the mind be confirmed in this conclusion, until it finally shakes off the idea of the contagious itineration of the disease; an idea founded, it must be admitted, on the most specious appearances, and strengthened by being associated with every term currently employed to express its progress. Happily indeed for mankind, it is not consistent with the common habitudes of the strong contagions, such as small-pox, to quit the spot where they arise, and spread over kingdoms and nations: if it had been, they would have long ago depopulated the earth.

The instances in which the contagious introduction of the disease into a new kingdom, district, town,

or village, is proved by evidence sufficient to satisfy an inquirer careful in the examination of facts, are so exceedingly rare, that they serve only as exceptions to prove the rule, while on the other hand numberless examples may be cited without difficulty, in which, after the severest scrutiny, no such connexion with any infected place has been traced, as could satisfactorily account for the origin of the disease. A closer view of the mode of its dissemination, as it has shown itself in our own country and under our own eyes, has enabled us to perceive more plainly the sources of those fallacies, by which foreign observers have been misled. And first, wherever there has been much freedom of intercourse, and especially of commercial intercourse, between contiguous towns in the same line of road, and these towns have been, in succession, invaded by the disease, it has been customary at once to infer contagion from this contiguity and succession alone. The whole progress of the disease in the cotton-manufacturing districts (containing more than a million and a half of inhabitants) is, with one ambiguous exception, an exposure of the erroneousness of this gratuitous inference. Manchester was attacked shortly after Liverpool; and after Manchester, Bolton, through which the great north road passes from Manchester; yet the disease was neither carried from Liverpool to Manchester, nor from Manchester to Bolton. Its spontaneous origin in Manchester we have seen. In Bolton the disease

which was exceedingly limited, (there being only fifty cases in a population of 20,000 inhabitants,) "could be traced to no importation, nor had the first patients the least intercourse with any infected persons or places."[a] The same thing is true of the populous towns of Stockport, Rochdale, Oldham, and Bury, each of the two former being respectively the first town after Manchester in two of the most frequented high-roads in England, one the great London, and the other the great Leeds road, and each visited by the disease subsequently to the visitation of Manchester. According to the customary assumption, Manchester having received the pestilence from Liverpool, would be concluded to have transmitted it to these places, but the fact is that in both it arose of its own accord. In Rochdale there were only three cases, and these were unconnected with each other. In Stockport, the disease spread to some extent after the appearance of spontaneous cases, having refused, if I may so express myself, to be propagated by two previously imported cases, one from Manchester, and the other from Liverpool, though they both sickened in crowded lodging-houses. In Oldham the disease had likewise a local origin, and in Bury, where only two cases occurred, the first was in a tramper who did not communicate the disease, and the second in a respectable inhabitant, who had neither been ex-

[a] Dr. Black, of Bolton, thus expresses himself in a private letter.

posed to the tramper, nor to any other source of contagion. The disease had a similar origin in the several townships of which Manchester is composed. In the adjoining borough of Salford, separated from Manchester only by the Irwell, an imported case from Drogheda was as usual barren, there being no connexion whatever between this and the subsequent seizures. The early progress of the Salford disease resembled, in fact, precisely what we shall see to have been its demeanour in Manchester; arising spontaneously, creeping about for three or four weeks, during which it attacked solitary individuals or single families in streets and situations the most distant and unconnected ; and then suddenly fixing itself in the lower and most populous part of the town. The history of the epidemic, in Great Britain, abounds with analogous examples, in which the strongest presumption of importation that contiguity and succession can confer, has vanished on a nearer inspection of the facts connected with the first cases. Such are the examples afforded by Newcastle, attacked after Sunderland and on the great north road; by Tranent, Musselburgh, Leith, and Edinburgh, in which city cases of barren importation preceded, as in Salford and Stockport, without producing, the true out-break of the disease. Glasgow, and Kirkintilloch, eight miles from it, furnish another instance, for it was the universal impression that the disease had been imported from Glasgow into Kirkintilloch, until the accurate

investigation of Dr. Laurie proved, in the most irrefragable manner, that it had arisen on the banks of the river, not from a contagious but a malarious source. I might multiply examples of the same kind, derived both from the domestic and foreign records of the disease, where its successive appearance in neighbouring places has been rashly held to be of itself, without any enquiry into the origin of the first cases, a proof of the itineration of the disease by contagion; but I am obliged to content myself with the remark, that wherever the account is circumstantial enough to contain that which is always indispensable to the history of each local attack—a detailed narrative of the first cases—it scarcely fails in a single instance to disprove the fact of the foreign introduction of the disease. The appearance of importation is still more imposing and more calculated to mislead, where an arm or an isthmus of the sea intervenes between the place whence the infection has been supposed to emanate, and that to which it is presumed, from dates and relative position, to have been carried. On reflection, however, it will appear that this case is not more unaccountable than the first, although I have nothing to do at present with the explanation of the facts, but only with the facts themselves. Who did not assume at once the Dutch or Russian origin of the Sunderland cholera, until the communications of Dr. Ogden, and Mr. Dixon,[a] (the truth of

[a] Med. Gaz. vol. ix. p. p. 586 and 668; and the Med. Chir. Review.

which I had an opportunity of knowing during my visit to that port,) left no room to doubt that the cases which ushered it into this island, came neither from the Baltic nor from Hamburgh: that they had no connexion, whatever, either with the shipping of the port, or each other: that they were, in short, purely indigenous? I might still further illustrate the same source of fallacy, by the invasion of Belfast, which succeeded to that of Glasgow, but without contagious communication, (although the *prima facie* belief naturally was, that Ireland had received the disease from the opposite shore of Scotland) and by very numerous cases of the same kind, spread over the whole foreign history of the epidemic, as in the seeming transmission of the disease from the Peninsula of India to Ceylon, between the opposite promontories of Adam's Bridge and Manaar, in which latter place there is evidence that its eruption was spontaneous.[a] With these cases might be advantageously contrasted the many in which towns, comparatively sequestered, have suffered severely, as that of Bilston,[b] which awakened the commiseration of all the country, or that of

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[a] See the accounts of Farrell and Marshall.

[b] "The disease certainly was not imported into Bilston, but made its appearance spontaneously." Extract of a letter to the author from the Rev. Mr. Leigh, the rector, whose name will be held in perpetual honour for the intrepid benevolence he displayed during that fearful epidemic.—We have the authority of Dr. Yates, (letter to the *Times*,) that it was not imported into Ely.

Ely, which was in communication with no infected place, while Cambridge, close to Ely, and holding with it a large and continual intercourse, entirely escaped.

A second and a fruitful source of error has been, the confident assumption of the importation of the disease from the mere circumstance of its breaking out being coincident with the arrival of persons from an infected district. Considering the constant and extraordinary intercourse which exists in the age in which we live, between all parts of the civilized world, this coincidence is almost unavoidable, and the question whether it be casual or not cannot be determined any more than the preceding question, without a careful examination of the individual first cases in every instance. Thus the origin of the disease in Scotland was falsely imputed to the contemporaneous arrival of persons from Newcastle. In this instance, a mere reference to dates was sufficient to falsify the imputation. Three cobblers, who had left Newcastle on the 14th of December, arrived in Haddington on the 19th, while the first case in that town, the case of William Craig, occurred on the 18th, just the day before their arrival. Had it chanced to occur a day later, there would have been still proof that the coincidence was accidental, for the cobblers were well and remained well; they had seen no cholera cases at Newcastle: and Craig's, with the subsequent cases, occurred within a circle of about one hundred yards

in diameter, in a low and filthy part of the town, on the banks of the river.[a] A still better exemplification of this second fallacy is the celebrated disembarkation, or rather pretended disembarkation of the cholera at the Mauritius, brought there all the way from Ceylon, by the Topaze frigate. It did certainly so happen, that a short period before the eruption of the disease in that island, the Topaze arrived there, having had, during her voyage from Trincomalee, seventeen persons attacked with cholera of whom four died. The ultra-contagionists seized with avidity this general fact, which they have ever since held fast, adducing it on all occasions as the most triumphant evidence of the itineration of the disease. But what are the particulars into which this general fact resolves itself?—that the frigate sailed on the 9th of October from Ceylon; that the seventeen cases of cholera occurred immediately after; that of the thirteen, eight soon recovered, while five suffered from the sequelæ of cholera, sequelæ which consisted not of secondary fever but of enteritis and dysentery, and that these five were sent, upon the arrival of the frigate, on the 29th of October, to the military hospital of Port St. Louis. The first case in the Mauritius, however, had occurred more than three weeks before the Topaze left Ceylon, and then as long an interval elapsed between this and the next, as be-

[a] Report of Dr. Meikle and Mr. G. H. Bell.

tween the first and second cases of Newcastle upon Tyne. The next cases, like the first, were among the Blacks: they occurred twenty days after the arrival of the Topaze: there is not the slightest evidence that connects these Blacks with the five men from the Topaze in the hospital, labouring, not under cholera, but under inflammatory affections of the bowels. Again: the cholera broke out nearly at the same time spontaneously in other distant and unconnected parts of the island, and among the merchant vessels moored in the harbour, while the Topaze, lying a mile and a half out at sea, continued exempt. Finally, the committee of the French and English medical officers signed a public declaration, that the disease had not been, in their opinion, introduced into the island, and the latter appealed to the fact, that the cholera had been endemic there in 1775.[a] Thus when the chronology of this far-famed occurrence is examined, when the date of the first case is known, and the circumstances that accompanied the eruption are taken into the account, it requires no sagacity to perceive that the arrival of the infected ship had nothing to do with the cholera of Port Louis, and that the relation of cause and effect has been in this memorable instance, arbitrarily assigned to a com-

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[a] Compare the Letter of Mr. Foy, the surgeon of the Topaze, with Dr. Kinnis's Report and Dr. Burke's Letter to General Darling.

bination of events perfectly fortuitous.—A coincidence similar in many points to that just considered, is connected with the first appearance of the disease in Europe, at Astrachan; and belongs equally to both the visitations of which that ill-fated city was the scene. Some time before the first attack in 1823, (as was subsequently discovered by Dr. Rehman who examined with that view the lists of the trading vessels,) a ship had arrived at Astrachan on board which eight persons had died during the voyage, of cholera. But who, from the bare statement of this fact, can be satisfied to conclude that the ship of Captain Andreas imported the disease from the shores of the Caspian, not only in the absence of all evidence to show the most remote dependance of the first cases on these infected persons, but in the face of the unanimous declaration of every eye-witness who was a competent judge of the matter; for all the medical authorities of Astrachan maintained the local origin of the disease in this first visitation. But the assumption of its foreign introduction in the second (1830) is still more groundless and untenable. On the 15th of July the brig Baku anchored in the quarantine station at the mouth of the Wolga, sixty miles from Astrachan. While in this station the disease broke out in the ship, which up to that time was healthy and had come from a healthy island: sixteen days after, it appeared in Astrachan. The Astrachan physicians declare in their report, which has not been

denied by Lichenstadt in all his eagerness of contradiction, that there was no vestige of communication between the first cases and the quarantine station. Well may a judicious critic ask, if a suspected vessel had anchored at the Nore for the purpose of performing quarantine, and the disease a fortnight after had appeared in London, whether in such an event any person would have thought of asserting, that the disease had been imported into London by the vessel detained at the Nore. Yet the cases are exactly parallel.[a]—The Supreme Medical Council of Russia manifested the same strong but vain solicitude to construe an accident into the cause of the Orenburgh epidemic, but were obliged in their concluding report to admit that "the important question whether the disease arose spontaneously in Orenburgh or was introduced into it from Asia remained unsettled, notwithstanding all the efforts of the local Board to determine it." Caravans had arrived from the Kirgis Steppes which had brought some intelligence of the existence of a disease in Bucharia bearing a slight resemblance to cholera; but the least time in which the caravans could make the journey is thirty days; every soul accompanying them had arrived at Orenburgh perfectly well; and the first cases, of which there is fortunately a de-

[a] See the Cholera Supplement to the Ed. Med. and Surg. Journal, p. xcix. et sqq.

tailed narrative, occurred spontaneously at the interval of a week each, and had no intercourse either with each other or with any of the caravan people.[a] It is not, then, the casual arrival of the caravans about the period of its eruption that can throw any doubt or ambiguity on the origin of the Orenburgh disease, the spontaneousness of which is settled by the very best evidence the case admits. —The hasty assumption of the contagious entrance of the cholera into Cairo, Shiraz, Tabriz, Warsaw, and many other cities from similar coincidences, is dissipated in like manner by subjecting it to the test of a rigorous examination. If we were unacquainted with the frequency and unavoidableness of such coincidences, the first glance at the case of Cairo would lead us to assume that the great Arabian caravan had brought the disease into Egypt. A detachment of this caravan had indeed passed through Cairo some weeks before, and the disease had not appeared; but the day after the halting of the remainder at the quarantine station, twelve miles from Cairo, from eighty to one hundred Mahomedans were seized with cholera in that city, besides Jews and Christians; and in five days more the deaths were about 1,000 daily. Now, besides the impossibility of explaining this multitude of cases simultaneously attacked on any principle of contagion, there is an entire deficiency of all evi-

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[a] Loc. cit.

dence to show that a single infected person entered the city from the caravan; and there is the additional fact, that in a fortnight the disease had spread over Upper and Lower Egypt like one of Pharaoh's plagues in spite of cordons and quarantines, and in spite of the extreme tardiness and smallness of the intercourse, either social or commercial, that exists between the lonely towns and villages arranged along the banks of the Nile.[a] The brevity which I am anxious to observe in this digression, and the desire I have to notice an English example of the fallacies in question, together with one of those exceptions, if exception it be, which prove the general rule of spontaneous origin, compel me to omit the particular consideration of the other foreign instances I had selected; but I cannot refrain from just remarking that according to the testimony of three physicians,[b] at least three cases of genuine cholera had occurred in Warsaw before the battle of Iganie, where it has been almost universally but erroneously believed that the Polish first caught it from the Russian soldiers. The truth seems to be, that the Poles were naturally willing, without any fastidious examination of the facts, to charge their barbarous enemies with the cruelty of introducing into Poland this dreadful scourge, in order to point the indignation of their own and of

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[a] Dr. Turnbull Christie's Letter from Egypt.

[b] Drs. Rehmer, Londe and Chamberet.

other nations still more strongly against the tyrant who oppressed them. The mistake arising from the interpretation of mere coincidences, into antecedent with their immediate consequent events must be liable in the very nature of things constantly to recur among armed bodies during their marches and counter-marches, wherever the disease is prevailing epidemically over any considerable part of a territory which happens to be the seat of war, and this undoubtedly is one principal reason why in India marching regiments were often thought to catch while they only shared the disease, and appeared, judging merely from the date of an attack, to convey the pestilence to places in their route, where it would have broken out at the time whether they had arrived or not.

The English case to which I have alluded, connected with this fallacy, is that of Hawick. It has been long since relied upon as an unquestionable example of imported cholera. Halliburton, an inhabitant of Hawick, is said to have brought the disease to that place from Morpeth, where he contracted it from a traveller sick of cholera in the inn where he passed a single night. But how entirely does the evidence fail in making out a satisfactory case of contagious introduction! Halliburton never saw the traveller who is assumed to have infected him ; he never even saw the chamber-maid, who, because she served both the rooms, Halliburton's and that occupied by the traveller, is fixed upon as

the medium of infection, although she remained herself quite well. If to these chasms in the testimony it be added, that at Hawick there was strong reason to suspect the operation of a malarious cause from the fact that the disease was almost confined to the premises at the back of Halliburton's house, and that in every other place in Northumberland the origin of the disease had been local and spontaneous, we may venture to erase even Hawick from the short catalogue of towns into which the disease has been proved to be imported.[a]

That there are a few such towns it is not my intention to deny, nor have I any solicitude to reduce them below their true number; for this, after a strict inquiry into the evidence on which each exception rests, is so exceedingly small that it serves to establish, as I have said, rather than weaken the general rule of spontaneous origin, even in those cases where an eruption has been coincident with the arrival of persons from infected districts. Among the very few foreign exceptions I might mention Iletsk according to the report of Dr. Schimanski, and St. Denis, in the Isle of Bourbon, according to that of Keraudren, though in the latter the features of contagion have been so outrageously magnified as to

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[a] See Dr. Douglas's Account of the Hawick attack, in the Cholera Gazette, No. vi. and Dr. Craigie's admirable description of the Newburn disease, in the Edinburgh Med. and Surg. Journal, cxi. p. 337.

give an air of caricature and fiction to the whole picture. One such exception has occurred in the cotton-manufacturing districts and one only, nor is even this free from all uncertainty : I allude to the case of Warrington. Five persons are said to have conveyed the disease into that town, the first from Middlewich, the rest from Manchester. The first (June 5th,) Baden, a bargeman, infected nobody: his was what may be called a case of barren importation. Cook, another bargeman, (June 21st) gave the disease to Mary Miller his mother-in-law who nursed him, but to no one else. Eliz. Miles had fled with her infant child James Miles from a lodging house in Blakely-street, Manchester, where the disease had burst forth, as will be hereafter seen, with extraordinary malignity, her husband being among the number of its victims. Seized in the market-place she was taken to the pass-house, where Brown who attended her took the disease and died : from the pass-house she was removed to the hospital, where Ann Leigh who nursed her took the disease and died likewise. The stream of contagion derived from the mother ended here, but the infant James was taken to the workhouse, where he sank under the disease (June 23) and four days after, it broke out in that house, and carried off eighteen of the inmates including the governess. Upon the same day on which the child James Miles died, Philip Ingram, a travelling vender of medicines, arrived at Warrington from Manchester with his

wife and family, and went to lodge in Bank-street at the house of one Lawless. On the 24th one of Ingram's children was attacked with cholera, and Jane Lawless: on the 26th, Ingram himself: three days after, two more of the Lawlesses; and on the 1st of July two more. From the Lawlesses, the general assertion is that the whole of Bank-street (in which forty-four persons died) was infected, as well as the several quarters of the town where the disease afterwards appeared. Such is the compressed account of a more detailed narrative for which I have been indebted to Mr. Glazebrook, the Secretary of the Warrington Board of Health; and I trust I shall not be accused of an unwarrantable degree of scepticism, if I remark, that I have not been able to learn what was the nature and extent of the communication between Bradley the first inmate of the workhouse who was attacked, and the child Miles, though it is indispensable to know this before we are in a condition to pronounce upon the origin of the disease in the workhouse; and that the importation of the disease into Bank-street is far from being an incontrovertible fact; first, because there is no positive proof that the Ingrams had been in contact with the disease in Manchester or were themselves infected at the time of their arrival: secondly, because Bank-street where they were seized, is, as will be hereafter shewn, one of those well-marked malarious situations where cholera is every day generated by causes independent of contagion:

and thirdly, because the simultaneous seizure of the child Ingram and Jane Lawless—the first two cases—which had in all probability one common source, are more naturally referred to malaria, a cause certainly present, than to contagion of whose presence there is no proof. A passage in the concluding communication with which I have been favoured by Mr. Glazebrook convinces me, that notwithstanding the general declaration that all Warrington was infected from the family of the Lawlesses, no such minute and scrupulous investigation into the propagation of the disease has hitherto been made, as experience has taught me to be absolutely necessary, in order to separate the cases into the classes to which each belongs. "For the purpose," he says, "of satisfying my own mind as to positive links in a chain of contagion, I have set a personal inquiry on foot, and have engaged the police officer whose duty it was to see to the removal of the healthy inmates of infected houses &c, to go from house to house and to obtain from the survivers all the information he can as to the apparent cause of attack in each individual." It is clear from this passage that no proper inquiry has yet been made; and I may further suggest with all deference, that when it is done it will be found to require so much knowledge, discernment and fidelity, and to be liable to so many sources of error, that some more enlightened agent should be selected for the task than a police officer can be supposed to be.

There is a third source of fallacy which has been more prolific of misrepresentation than either of the two already noticed, I mean the inference of contagious importation from the occurrence of first cases either among the shipping of a sea-port, or the parts of a town with which the shipping is in contact, or generally in places situated on the banks of a navigable river, although that inference has been drawn either without the prosecution of any inquiry into the history of those first cases, or in direct contradiction to the results of this inquiry. That the mere navigableness of a river, and the consequent amount of human intercouse alongits borders, will not account for the prevalence of cholera in the places so situated, is clear from the fact of its equal prevalence on the banks of the rivers in the peninsula of Hindostan, where navigation is scarcely carried on even to the most trifling extent on any river, and where hardly an instance can be mentioned of a great road running on the bank of a river, for they almost all cross them.[a] But what can explain more naturally and more easily the predilection that cholera seems to have for such situations, than the activity of the same causes that presides over its indigenous origin in similar localitied in India? where else is malaria so constantly or so abundantly present as in harbours and among docks, or on the low and swampy banks of rivers? and where else,

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[a] Orton on Cholera, 2d edition, page 411.

in company with those secondary causes that generate the poison, is there congregated a greater number of the miserable beings who are most susceptible of its impressions? In the foreign accounts nothing occurs more frequently than the unsupported and dogmatical assertion that "the barks" brought the disease. Even the respectable English Commissioners who were sent to report upon the Petersburgh disease, wrote home that the barks brought it, and the east wind blew it over the city. Never was any declaration more entirely gratuitous. A merchant, who had not been, as far as was known, in communication with any infected person, slipped from his boat into the river on the 25th of June, (N. S.) and got wet through: the next day he was attacked with cholera. This was the first case. About the same time D'Mitrieff, a domestic slave of the Lady Zenovieff, was seized and died. On this second case a Protocol was presented to the Emperor, signed by the Chief Minister of Police and four distinguished medical professors, in which, arch-contagionists as they were, they are obliged to admit in the words of the Protocol,[a] "that notwithstanding all investigation, it had not been ascertained whence the choleric germ could have been communicated to D'Mitrieff, who had resided a long time in the capital, and had no immediate intercourse

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[a] Papers on the Cholera Spasmodica, published by order of His Majesty's Privy Council, page 32.

with persons who had come from any other parts." Two days after, a watchman, and a billiard-marker were taken ill, and the commissioners observe that no personal intercourse was traced between these four first cases. Such, briefly, were the facts which served to guide the judgment of the English physicians entrusted with that important mission, and it is perplexing to discover on what grounds they could decide in favour of foreign importation. The wisdom of those orders for quarantine and cordons long before strongly enforced by the Emperor and his medical council hinged, indeed, upon this decision; and it is not very improbable that besides the embarrassment it would have occasioned to the English Government, the order of Saint Anna and the responsive honours that awaited their arrival in England might have been lost, had their conviction of the manner in which the disease arose, unfortunately differed from that of the great medical authorities who governed the conduct of the emperor in this matter. Without any uncharitable imputation on the conscientiousness of the English commissioners, it is conceivable that the rewards which would be dispensed or withheld according to the nature of the opinion they formed, might incline them to manifest a smaller measure both of penetration and inflexibility than would have been displayed by less interested observers. However this may be, the origin of the cholera of St. Petersburgh was as clearly without importation as that of Man-

chester, or I may add of Moscow, where it was disputed only from which of several spontaneous cases the epidemic ought to be dated.—When the disease appeared in the Thames at London, the strongest disposition was shown to conclude from that circumstance alone the contagious introduction of the disease, and when the first case, that of Sullivan, proved after the most careful inquiry to have arisen without infection, the editors of the Cholera Gazette, at that time the organ of the medical advisers of the government, strenuously denied that Sullivan had died of cholera. Their denial cannot now be read without astonishment not unmixed with indignation; for a more genuine case of cholera, whether it be tried by the symptoms during life or the appearances after death,[a] has not occurred throughout the history of the disease. That the same advisers were confounded by the accumulating proofs of the spontaneous origin of the disease, in ports where foreign contagion had been inferred in the first instance and before the necessary investigations had taken place, is but too evident from the unworthy treatment which Dr. Hamett experienced. They returned to this physician his papers in order that he might draw up a concise account of the epidemic as he had witnessed it in Dantzic; but a report marked (A) was missing, (nor was it ever after found) which "comprised certain authentic

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[a] See the Cholera Gazette, No. 3. p. 129.

isolated cases of cholera, and the four first acknowledged cases of the epidemic, which had all occurred previously to the arrival of vessels from Russian ports," and a mass of evidence "in support of the conclusion that the disease had not been imported into Dantzic."[a] The zeal which could impel men of honour to the performance of so mean a service in the cause of contagion, must have been not a little irritated by the similar testimony sent home by the British Consul at Riga, respecting the origin of the disease in that port: "It is impossible," he says, "to trace the origin of the disease to the barks; indeed it had not manifested itself at the place whence they come till after it had broken out here. The nearest point infected was Schowlen, (at a distance of two hundred wersts,) and it appeared simultaneously in three different places at Riga, without touching the interjacent country. The first cases were two stonemasons, working in the Petersburgh suburbs, a person in the citadel, and a lady resident in the town. None of these persons had had the slightest communication with the crews of barks, or other strangers, and the quarter inhabited by people of that description was later attacked, though it has ultimately suffered most."

But that I have transgressed already the proper limits of a digression, I might proceed to show that in Berlin the opinion of Dr. Becker, that it was

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[a] Hamett's Official Reports, Introd. p. xi.

brought there by the boats on the Sprey, is a mere assumption derived, as usual, from its first appearance being near the river and among the barges, while for its spontaneous invasion of Hamburgh Constantinople and Smyrna, (cities though so remote not dissimilarly situated as far as this question is concerned) we have the authority of Dr. Fricke Dr. Macarthy and the Belgian Consul. The proofs in fact of the internal, and if I may use this expression, the domestic origin of the disease in all the great cities of the world from which we have received any circumstantial accounts made and communicated by competent observers, are uniform and striking. Such is Mr. Fergus's masterly and interesting description of the Vienna epidemic,[a] far more extensive and fatal than that of Manchester, but its counterpart as to the rise and mode of propagation of the disease. Paris too might be adduced as a celebrated example of the local origin of cholera. Struck by the certainty of this fact, it is notorious that the most eminent members of the medical profession in that city rashly signed a denial that the disease was contagious at all, as if the question of future contagion could be anywhere settled by the nature of the first cases. The conversion, however, which subsequent experience wrought in Velpeau and others, left the certainty of the spontaneous appearance of the disease entirely unshaken.

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[a] Lancet, Nos. 460, 461.

The three sources of fallacy which I have considered are perhaps the principal. There are others which I am obliged to pass over, such as the false impression that the disease travels from large town to large town, and from port to port, arising from the circumstance that we have intelligence only of its out-break in places of note and importance, while the attacks of intermediate villages or small obscure and remote places are unreported and unknown beyond their own precincts. Our information too concerning a vast tract of the supposed travels of the cholera, such as its course through Arabia and Persia &c., is mere hearsay and rumour, and cannot be relied upon. Again, where the reporters have been government agents, there has been often not a falsification of facts—this would be an extravagant accusation—but certainly a very perceptible inclination to interpret them in such a manner as not to unsettle the laws and regulations of quarantine at present in force.

Turning from the history of the disease on a large, I might show the operation of the same fallacies on a smaller scale, from which it would appear that the epidemic has broken out spontaneously in regiments, of which the reports of the three Presidencies of India contain several instances; in ships as in the Catharine Forbes convict ship, the Carnatic, the ship mentioned by Mr. Scott, which reached the equator from India before the disease appeared, the Brutus, &c.; in prisons, as in the Newcastle, the

Penitentiary of Mill Bank, the Cold-Bath Fields, the Salford New Bailey &c. ; in workhouses as in that of Manchester among many others ; in Lunatic Asylums as in that of Haslar Hospital, the White House &c., to which must be added the Lancaster County Asylum notwithstanding the declaration to the contrary of Mr. Davidson and his two colleagues, for I have the authority of Mr. Harrison the highly respectable surgeon who has the care of the Lunatic Asylum connected with the workhouse of this town for saying, that the patient, immediately after whose arrival at the county Asylum the disease happened to break out in that institution, was perfectly well when she left Manchester, and had never been exposed to an infected person or thing. This, in short, is one of the numerous coincidences that have been misconstrued into examples of the agency of cause and effect.

Could the details of this second order of the proofs of spontaneous origin be entered into, they would more amply illustrate and more fully establish the opinion which has led to this not irrelevant discussion, viz. that there is nothing to surprise us in the spontaneous eruption of the Manchester cholera, its spontaneousness being in perfect conformity with the habitudes of the disease. That the conclusion, however, is one of the utmost practical moment cannot be denied. It is on the mode in which the disease originates, and not on that in which after its commencement it is subsequently pro-

pagated, that the important question of quarantine depends. The disease after it has established itself in a given place may be more or less contagious, but if the fact turns out to be that it arises in ninety-nine cases out of a hundred without importation—that imported cases of cholera, like imported cases of ague, prove barren—and that the disease spreads only after the appearance of spontaneous cases—quarantine is useless, and the injury it inflicts on the commercial relations and maritime intercourse of the country that adopts it is an absolute and uncompensated evil. So satisfied I am of the truth of this conclusion from an extended examination of the history of first cases, that I durst almost venture to assert of cholera what Dr. Vetch boldly but truly asserted of yellow fever, (which in its causes differs chiefly from cholera in this, that a high atmospheric temperature is indispensably necessary for the existence of the former, while it only favours that of the latter) that if the government were to offer a premium for the introduction of cholera into any town selected for that purpose, it could not be introduced. Springing up upon the spot, on the one hand no amount of intercourse can certainly convey the poison so as to give rise to a genuine eruption of the disease, and on the other hand no human artifices of exclusion can, in the very nature of things, shut it out.

Extension of the Disease by Spontaneous Cases.—If the first case in Manchester were spon-

taneous, the presumption undoubtedly is that other cases in the progress of the epidemic would bear the same character, and accordingly by a reference to the Tables it will be seen, that of the two hundred edited cases there are one hundred and seventeen where after the most searching and jealous inquiry no communication could be traced; and of the one hundred unedited, there are sixty-two more. Of this kind were the cases that immediately followed Palfreyman's and announced the opening of the epidemic. The second person who was smitten, six days after Palfreyman's death, lived at a great distance from him on the opposite side of the town in John-street Ancoats, a moderately decent street in one of the worst and most thickly peopled districts of the town. Chorlton was a clean and industrious woman who had been subject to bowel complaints, and had long had delicate health from a cause which remained unknown till she sunk under this attack of cholera. Upon inspecting her body after death, we then found an encysted tumour in the right lobe of the liver of the size and shape of an orange, consisting of a substance resembling a mixture of the cineritious and medullary parts of the brain, contained in a very tough fibrous capsule. Between Palfreyman and Chorlton no communication whatever had taken place, but as it appeared that she had been seized on her return from a house in Chorlton-Row in which an old woman was lying dead, there was a rumour that she had taken the disease from this

woman. The suspected body was consequently examined and found to have no marks of cholera; to have died of a decay of nature at a very advanced age; and moreover, not to have been seen by Chorlton. At an interval of two days from the death of Chorlton sickened and died of the disease Thomas Cavanagh, a fine healthy child five years old, who lived in Little Ireland a quarter of the town equally distant from the residence of Chorlton and that of Palfreyman. Little Ireland, as may be readily conjectured, is so called from its being occupied by a colony of Irish, who are remarkable more for their love of tumult and violence and their filthy habits than for any peculiar destitution or poverty, since most of them have pretty constant work in some of the mass of factories in the midst of which they live. It is a damp and dismal sort of excavation on the banks of the Medlock, whose discoloured waters are steadily too high to permit any but a very imperfect surface drainage, and which, after rain, inundates more or less the lower part of the hollow. Horrid and insalubrious as this spot is, a large area in the centre hitherto unbuilt upon, and the width of the lower cottage streets admit of a degree of ventilation which considerably diminishes its unhealthiness, not, however, so much but that there was the utmost reason for the opinion expressed at the conclusion of the report of a subcommittee of the Board of Health appointed specially to inspect the place, that "a more suitable soil

and situation for the malignant development of cholera could not be found." The child Cavanagh had neither any remote nor direct communication with the two antecedent cases, nor with any other source of infection.

The mother of this child—Elizabeth Cavanagh was taken ill the day after his death, and died in ten hours from the time of her seizure. She is the first of a series of cases, which for reasons to be assigned when I come to arrange them, may be called as far as they regard the question of the contagiousness of the disease, equivocal, and I therefore pass on to the next, which was another of spontaneous origin in a part of the town distant from all the preceding, and occurring at the interval of a week from the case of Elizabeth Cavanagh. Richard Bullock inhabited an upper room in a mean old house standing in a sort of recess in Chorlton-street Portland-street, a populous and dirty district where the typhus fever of 1791 raged so fearfully. He was a cobbler by trade, and one of those reprobates whom the cholera is said to know for its victims—an idle, quarrelsome, profane drunkard, starving both himself and his family. A fortnight before he had received a serious injury in the side from a blow in fighting: he was in a state of intoxication at the time of his seizure which came on in the form of a fit, a sure presage of a rapidly fatal attack. After repeated inquiries both at the house of this man and the haunts which he frequented, I

could not discover the slightest evidence of infection, and he was wholly unconnected with the other cases. I may mention in this place the fate of the other members of Bullock's unhappy family, although like the elder Cavanagh they belong to the equivocal cases. On the morning after his death, his wife Ellen and his two daughters Jane three years and Martha eight months old, all three poor emaciated victims of the father's depravity, were removed to the Knott Mill Cholera hospital, then used as a reception house. The mother, whose faculties had been impaired by hard usage, was frightened at the idea of being immured, with her children, alone in the hospital, a cheerless building in a low insalubrious situation washed by the Medlock. She threatened to throw herself into the river and on that account was locked up at night. She remained well, however, and her children, till Sunday night (Whitsunday) four days after her husband's death; when on awaking in the night she found the infant dead by her side, and half an hour after, her elder girl, who had been seized with diarrhœa early in the evening, expired in the same bed. At half-past eight on the Monday morning when it had been arranged that all three were to have been discharged, the mother breakfasted apparently in good health : at nine she was seized with severe vomiting and purging, and died in about nineteen hours. Thus the whole family were swept away. On inspection after death the viscera of the children bore marks of disease

unconnected with cholera, but rice-watery fluids were found in the intestines of both. It was long before the Knott Mill Cholera hospital recovered from the prejudice with which the inauspicious death of these three persons inspired the poor against it. They had gone in well and sorely against the wishes of the woman and her friends, having yielded to the earnest solicitations of the medical men, and they had not been heard of again until they were borne away to be laid in the same grave. The mob which collected at the gates of the hospital loudly accused the doctors of poison, and even of darker crimes.

In the course of the week (the Kersal-Moor race week) in which Ellen Bullock died, an extraordinary out-break of the disease took place in a lodging-house in Blakeley-street, No. 12—a locality as far asunder from all those which it had hitherto visited, as they were from each other. Out of eighteen persons at that time staying in the house, ten were attacked and eight died. The general belief was, and is, that the disease was imported into this house from Liverpool, and it must be admitted that the first impression produced by the facts of the case is in favour of that opinion, but this impression becomes fainter if it does not altogether vanish as the evidence is more closely approached. The first sufferer, Martha Hope, felt the symptoms of the disease come upon her as she was returning from the race-course on the Wednesday afternoon, and sank after a very lingering consecutive fever.

She had returned from a visit to Liverpool on the preceding Saturday, her husband having arrived the day before: he was a black man who exhibited occasionally at country fares as a juggler: she was a hawker of smallwares. They had left Liverpool at day-break on the morning of Thursday the 7th of June perfectly well: she had slept at Warrington on the Thursday night and at Hollins Green on the Friday night. They both of them repeatedly declared, and her assurance was made to me at a time when it would be hard to suspect her of persisting in a lie, that in Liverpool they had seen nothing of cholera except the van driven at a distance, and yet if she contracted the disease by contagion at all it must have been in Liverpool, for it existed neither in Warrington nor in Hollins Green at the time of their passage through these places. The truth of their declaration is confirmed by the reflection that the interval which elapsed between Hope's departure from Liverpool and the first indications of her disease, would extend the time of incubation, in her case, to between seven and eight days, a longer period than experience and official authority[a] warrant us in allowing. To this

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[a] "It appears to be clearly established that the longest interval between a well-authenticated, latest, or only exposure to the infection of spasmodic cholera, and the subsequent manifestation of that disease in a susceptible person has been from five to six days." Quarantine Documents transmitted to the Privy Council by the Central Board of Health:—Question first.

must be added, that at the end of the same street and on the day which followed Hope's attack, a case occurred, that of a respectable woman of the name of Kenyon, the origin of which without contagion was clear and indisputable.

The attacks which succeeded that of Hope in the Blakeley-street lodging-house are to be classed among the equivocal cases. Two days after, a juggler was seized of the name of Mills—alias Comfit—but better known by the name of 'long Jim,' a dissolute and drunken fellow, famous for the expertness with which he could swallow a sword three quarters of a yard long. He occupied the bed adjoining to Hope's, in a garret in which there were seven beds lodging in all on an average from sixteen to twenty persons of the same character, that is, trampers and vagabonds. On the Saturday night, an inveterate old sot of the name of Jane Robinson fell ill; on the Sunday morning a deformed profligate little man called 'sailor Jack,' who went on crutches and had lost his jacket in a drunken street riot the night before, began suddenly to complain, and in the following night another woman was taken, Jane Lewis—six months advanced in pregnancy. The disease proved rapidly fatal in them all. On the Monday morning the rest of the lodgers, struck with terror at the destructiveness of the pestilence that had so suddenly broken in upon them, dispersed and the house was closed: five, however, of

the fugitives took the seeds of the disease along with them. On the evening of the day of their flight, Mills's wife who had walked to Warrington with her child in her arms was attacked in the market-place of that town, as I have already related, and the child who was taken to the workhouse was seized two days after (on the 20th.) The mother recovered but the child died. A black man (John Thomas) of a fine athletic form, well known in the streets of the town from his carrying about the placard of a profile-painter, set out for Leeds with the hope of joining his master, but sickened and died of cholera at the Coach and Horses public-house near Burstall. A woman of the name of Cuff, who was hastening to Birmingham with her husband, sank under a very malignant form of the disease in a lodging-house at Stockport. The wife of the Blakeley-street lodging-house keeper, Mc. Allister, was also seized after her escape into the country, but, more fortunate than her guests, she survived the attack.

Contemporaneously with the appearance of cholera in Blakeley-street, it showed itself in five other streets, four of which were likewise in new and distant vicinities ; and in the following week it appeared in seven other streets, three of which were in districts that till then had been exempt. Of the seventeen cases included in this space of time, eight were unconnected solitary cases—that is neither preceded, followed, nor associated with any other cases ; and of the remaining nine three were like-

wise spontaneous. Of these, however, one was followed by four others in the same house, and each of the remaining two was succeeded by cases in which the operation of contagion was for the first time distinctly recognized. Reserving a statement of the facts and reasonings which convinced me of the reality of this mode of propagation to a future division of these remarks, I continue without interruption a rapid enumeration of the spontaneous cases on each of which I may refer to the Tables for more complete information.

In the last week in June seventeen new cases occurred, among which there was no possibility of tracing nine to any source of infection either imported or domestic, each of these nine springing up in a street or court uninvaded before, of which streets or courts five were in quarters of the town remote comparatively speaking from those already visited. Of twenty-eight individuals who were attacked in the first week of July there were thirteen spontaneous cases in as many distinct streets or courts, each of them likewise being the first that had happened in the particular locality, one of them, though for some time a solitary case, proving to be the first of a cluster at Collyhurst; and another having arisen in the Fever-wards, a perfectly insulated example of the disease. During the following week, that is, from the 8th to the 15th of July the number of new cases fell to twenty-

two—nine of which were in fresh streets or courts, and four belonged to new localities: in fifteen a strict investigation satisfactorily showed that the disease had not been owing to communication direct or indirect; and among these I have placed the case of Sarah Lawton, which preceded its development in the township of Chorlton-upon-Medlock. The next week produced only thirteen native cases, two more being imported by the canal boats, neither of them however either caused by or giving origin to other cases. The same may be said of eight of the remainder: the new localities were three.

With the eight which I have mentioned one is classed, the history of which calls for a more circumstantial notice, possessing as it does a more than ordinary interest from its having been the forerunner and, according to the general opinion, the cause of one of the most sudden and alarming bursts of the disease in its deadliest form, which happened during the whole course of the Mancheser epidemic. Of seventeen persons who inhabited four adjoining houses in a court called Allen's court—most of whom were attacked within forty-eight hours of each other, fourteen died. The man to whom I allude, who is thought to have introduced the disease into this ill-fated place, (now known by the forbidding name of Cholera court,) and the effluvia from whose dead body, kept two days and a half

without interment, infected, as is confidently believed, the greater part of the sufferers, was William Bostock. Bostock was an old soldier who got his livelihood by selling matches: a weakly man but so accustomed to the stimulus of spirituous liquors that he could take a pint of rum without seeming to feel its effects. On this account he was seldom seen drunk except on pension days. He was subject after drinking to violent cramps of the lower extremities, for which he wore an enchanted ring, and his wife told me that the spasms in which he died were owing to his having lost the ring from his finger the day of his attack. It was falsely reported that on that day he had returned from Warrington, for I ascertained that he had not been out of town for three weeks, during which time his daily round had been through Salford and Pendleton, where there was no cholera. I have thought myself authorized, therefore, in placing Bostock among the spontaneous cases partly from this absence of all proof that he received the infection from any other case, partly from the nature of the locality in which the explosion that followed took place, and in no small measure also from the circumstances which attended the seizure of the other associated cases—circumstances which in their relation to the subject of the mode of propagation of cholera are in the highest degree instructive and interesting, and which, whatever other explanation is adopted, render it impossible to look

upon Bostock's as the first link in a chain of contagion. The second case that occurred was that of William Rarnay, who was taken with diarrhœa on Thursday July 26th, the day between Bostock's death and his interment: the diarrhœa continued four days, when collapse supervened in the Harrison-street Reception-house, where he had been removed. As Rarnay lived at one angle of the court and Bostock at another, nothing is more natural to suppose than that they might know each other and have the usual intercourse of neighbours. The truth however is that no intercourse had taken place, for the Rarnays had only come to live in the court on the preceding Monday, perfect strangers to every inhabitant of it, and they had not from their arrival up to the time of William's diarrhœa, exchanged a word even with the persons who lived next door to them. This fact was established not only by the testimony of Rarnay who is living, and his wife, but by that of Turner, a respectable man who lodged with them and who assured me on his death-bed of the truth of it, and by the concurrent evidence of all the people of the court. To this case may be added that of Hannah Rix, who, notwithstanding that she nursed Bostock, is not on that account to be set down as having caught the disease from him, because she had had spontaneous diarrhœa for a week before his illness which did not leave her till it passed into fatal collapse on the Saturday after his death. The first person in the

court whose case may be suspected of having originated in contagion was Anne Godwin; and even here no communication had taken place during life. After his death, Bostock's wife had gone into Godwin's for a few minutes, to request that a note might be written for her which Mrs. Godwin carried to the door of Bostock's house without entering it, observing on her return that she had perceived a very bad smell issue from the room in which Bostock's corpse was lying. This woman, who I must not forget to mention had but just completely recovered from a severe previous diarrhœa under which she had laboured three weeks before Bostock's disorder, died in the course of the following night of a violent and overwhelming attack. In the course of the same night was seized Jane Smyrke between whom and any other case there was no ascertainable connexion, and whom I have less scruple in adding to the list of spontaneous cases, because, three weeks before, one of her brothers had suffered a pretty severe attack of the disease, without there being the slightest proof that it arose from contagion. He had been perfectly well for a fortnight. Bostock's wife and Bostock himself in the beginning of his illness had nursed the child of Bailey, the poor woman who was the next victim. In the afternoon of the same day and at the same hour, one o'clock, were seized John Cooke and Margaret Burke while sitting at work at their looms in the same garret, for the greater number of the sufferers

in this court were decent and reputable silk weavers. Here likewise, not the least trace of communication could be discovered before this simultaneous attack, Burke having indeed visited Bailey but not till after she was ill herself, nor is it a little remarkable that the next two cases, those of Sarah Rarnay (the child of William, before mentioned) and of William Turner who lodged in a different room of the same house, furnished another example of a double attack at the self-same time,—one hour after midnight, neither of them having approached either Bostock or any infected person, unless Rarnay the father be considered one, whose diarrhœa was then so slight that he paid no attention to it. I cannot pass without commiseration the hard and pitiable destiny of Turner. Originally a public singer in Dublin of which he was a native, having lost his teeth, in order to obtain a livlihood he learnt the trade of a silk weaver, and was about to enter upon his new occupation when the cholera broke out in that city. Terrified for the safety of his family, he left Dublin to prepare a safe asylum for them in these districts, and after many privations and hardships had obtained work, written to his wife to join him, and taken a lodging in Allen's court, just in time to fall a prey to the disease which he had so studiously endeavoured to shun.

Three hours after the attack of Turner were seized Richard Smyrke who had carried his daughter to the Cholera hospital, and Margaret

Davenport who had been once to see Godwin during her illness. The three next cases Elizabeth the daughter of Hannah Rix, Rainsford the mother of Bailey, and Barber a woman who lived in the house with Cooke had been freely exposed to contagion, while with respect to the two last which complete the melancholy list,—the Wrights, mother and son,—who fled from the court soon after the eruption of the pestilence, the boy's was as far as could be determined a spontaneous case; the mother, as may be supposed, nursed her son. She was seized, she told me, in her sleep with a severe purging on dreaming that she heard the wheels of the cholera van rattle up to the door of the house where they had taken refuge.

On a review of all the circumstances connected with the out-burst of cholera in Allen's court—the fact that four cases of spontaneous diarrhœa had occurred there before the attack of Bostock, that his attack itself could not be fairly ascribed to infection, that contrary to all probability there was no intercourse whatever between several of the cases and those previously seized, notwithstanding the contiguity of their habitations—that in others the exposure was exceedingly slight and transient, and that the seizures were on the whole either simultaneous or the interval between them too short to correspond with our ideas of the comparatively more tardy, regular, and progressive development to which contagion gives rise,—no

other conclusion can be legitimately drawn, than that this agent was by no means the only one busied in the work of death, but that if present at all it was associated with another not less destructive than itself. This conclusion will be greatly strengthened when the nature of the locality is made known.[a] The short row of houses in which the disease raged, stands down on the edge of the river Irk forty feet below the level of Long Millgate, the street between which and the river, Allen's court is situated. A second irregular group of houses placed high up on the brow of the descent from the street, and overlooking the first row, closes the court in that direction, which communicates with the street by a long narrow and dark passage. You descend through this passage to the brow, and thence to the row of houses on the river's edge by interrupted flights of steep steps, and you find yourself when at the bottom in a kind of well or pit, suffocated for want of air (the place admitting of no ventilation) and half poisoned by the effluvia arising from two conveniences which stand in the centre of the well-like area. The brow is covered with filthy refuse—a tripe boiler's works are on one side the court, a catgut manufactory on the other: in front is the Irk flowing close under the houses, dyed and defiled by impurities of every kind,[b]

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[a] See the plate, fig. 1.

[b] One of the most considerable sewers of the town, that of Long Millgate and Hanover-street, empties itself into the Irk at no great distance below Allen's court, and just above a dam which

(which at the period of the attack, when the water was shallow, were acted on by a midsummer sun,) and on its bank immediately opposite extend large skinneries, with a spacious burial ground occupying the acclivity behind them. Such is the topography of Allen's court: and if there be in any case a local cause of cholera depending on the disengagement of a peculiar kind of malaria, what spot could be found more favourable to the generation of such a cause? The probability of malarious origin becomes almost converted into certainty when two remarkable facts are added: first, that the attack was limited to the row of houses on the river's edge, and that not a single case occurred in any of the houses which occupied the elevated brow of the hill above, though the area between them is very small: secondly, that of the friends who came to see and to attend upon the sufferers, those escaped without exception who lived out of the court.

In the same week with the Allen's court cases, nine others occurred, four of which introduced the disease into fresh courts or streets, all four, as well as one other, being spontaneous cases. Of the remaining five, two, Martha Barker and Charles Blinkhorn were regarded as links in the imaginary chain of contagion connected with Allen's court; I have placed them, however, for the following reasons, among the spontaneous series. Barker's attack

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has the effect of detaining the contents of the sewer and throwing them in the direction of the court.

was ascribed to her having washed Davenport's clothes, but I found by a minute inquiry into dates that the last clothes which Barker's girl fetched from Davenport's to be washed, were brought to her cellar on the Thursday morning, both Davenport and Godwin (who it may be remembered was believed to have infected Davenport) being at the time in perfect health. No other source of contagion was suspected in Barker's case. As to the infant Charles Blinkhorn it was nursed by Barker, but almost at the same moment in which Barker was suddenly seized with severe diarrhœa, the child fell into fits that were attended by rice-watery evacuations. These simultaneous double attacks are particularly worthy of observation. Another of the spontaneous cases, that of Phœbe Drew, was followed by the seizure of her husband, three children and a girl who waited on her. A third, that of George Dunn, immediately preceded an out-break of the disease scarcely less fatal in its consequences than that of Allen's court, marked, however, in its progress by some instances of contagion almost as distinct and undeniable as were the uncommunicated cases with which they were intermixed. In Back Hart-street, the street which was the chief scene of this mortality—infamous as a nest of vagabonds and harlots—and in the adjoining street where the backs of the houses look towards the centre of Back Hart-street, within a few yards of each other, fourteen persons were attacked of whom almost all

died. The case of George Dunn was followed by that of his mother and two brothers—a sister and a brother's wife—together with the sister and father of that wife, the four last (not included in the fourteen) residing in distant parts of the town. Four only of the eighteen cases originated without exposure to infection and among these is marked that of Clayton an old woman who had had diarrhœa for a month, but did not fall into the state of collapse till after she had been in to see George Dunn. As this eruption of the disease approached in suddenness, and malignity to that of Allen's court, while they differed in the slower and more measured succession of the cases in Back Hart-street, so it was almost as remarkable for the limitation of its sphere, its abrupt termination, and the malarious character of the locality, infinitely well suited, as we shall hereafter see, to breed without contagion the specific poison of cholera.

During the week in which the disease broke out in Back Hart-street including the first days of August, of forty-four cases not hitherto noticed, twenty-four were spontaneous and sixteen of these arose in new courts or streets, and in the second week of August besides a continuation of the Back Hart-street cases, there were nearly one hundred seizures in other parts of the town—and of these, sixty-three were uncommunicated, and of the sixty-three, forty-one were in new courts or streets. Among these streets an infamous one was now for

the first time invaded—Back Parliament-street—in reality not a street but a narrow flagged alley built in at both extremities, the houses in which are each inhabited by a swarm of low prostitutes, nor is it undeserving of notice that it was impossible to trace any communication in the cases of the two first of these wretched women who perished by the disease, either with each other, or with any other person labouring under cholera. One of them well known in those haunts of vice by the name of 'crazy Bess' unable to pay for a lodging, had lain the three nights previous to her attack on the bare flags of the alley.

Extension of the disease by contagious cases.—I proceed to distribute the second series of cases which will serve to exhibit the share which contagion has had in the propagation of the Manchester epidemic as far as I pursued its course. It may be expedient however, before I enter on the second to justify the first by an anticipation of some objections which the absolute contagionist may oppose to it. The investigation is attended by the two-fold difficulty that attends every other inquiry whether it be conducted by the method of observation or experiment, that of obtaining a collection of facts carefully made and faithfully recorded, and that of drawing from them the conclusions they admit, and no other. In this case it is the facts which the unconditional contagionist will be inclined to dispute, insisting perhaps that communication may

have existed where there has been no consciousness of it, or concealed from very obvious motives where it has been known. Satisfied with having done everything in my power to avoid them, I will not be so rash as to assume that no errors have crept into the Tables, but it may be at least replied to this objection, first, that such a kind and degree of communication is indispensably required to establish a case of contagion, as to leave little if any probability that a person can be infected without having some intimation of it, and secondly that while there may undoubtedly be strong temptations to hide the truth on the part of the patient or his friends, the neighbours have no such motives, but are forward from a love of gossip or of mischief, both to discover whatever secret has been entrusted to them and to imagine contagion where none exists. The impression of the people of Allen's court that Bostock's dead body had bred the infection in the court—unfounded as we have seen it to be—was so strong and general, that they could hardly be restrained from laying violent hands on his widow.

The truth of non-communication while it must be allowed to rest principally on oral testimony, receives the strongest confirmation from other reflections. Not to mention the uncommunicated origin of disease in the Gangetic Delta,[a] or its

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[a] From the history of the disease which Dr. Craigie has given us in the last No. (cxv.) of the Ed. Med. and Surg. Journal—by

close resemblance to the worst forms of our indigenous cholera which has always been believed to be spontaneous in the sense here given to this epithet, the rise of the first cases that happened in this town and that were capable of being studied with the utmost leisure and deliberation, wanted, as we have seen, all those tests of contagion which have been so ably illustrated by Dr. Allison.[a] Here was no previous arrival of infected cases: no radiation from a common centre: no propagation of the disease along lines marked by the greatest freedom of intercourse. On the contrary it will be seen by an inspection of the Chart that the first cases sprang up in situations so remote and in directions so opposite, that they might have been arranged expressly for the purpose of dissipating the extravagant and pernicious dread of contagion which at that time possessed the town. The undeniable proof of the spontaneousness of these early dispersed cases, which it should be remarked have ushered in the disease not here only but in almost every town, have been evaded indeed, and that too by some able writers on

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far the most learned and elaborate history hitherto written,—it is clear that more or less of the malignant cholera has always existed from the most remote antiquity to the present day, especially in hot and aguish countries. This accomplished physician seems however not to have seen the curious remark of a Hebrew scholar that 'cholerim raim' is the name by which Moses designates the epidemic sicknesses with which he threatens the Israelites for their sins.

[a] Ed. Med. and Surg. Journal xxviii.

the side of absolute contagion by a sophism of a very puerile kind. Such cases have been called 'sporadic,' and thus labelled, have been laid aside as if they were of a nature totally different from the cases that occur in the thick of the epidemic. But it is as ridiculous to suppose that this word, however learned be its sound, can have the power of changing the nature of these cases, which are genuine examples of malignant cholera, as it would be to pretend (if I may be allowed this comparison) that the few earliest straggling daisies or swallows that announce the coming spring, and to which this title of 'sporadic' is as applicable as to the cases to which I allude, are to be considered merely on account of their paucity and dispersion, of a distinct species from those which presently after fill the fields and the air. This absurd evasion, it is true, has been attempted by one party only of the absolute contagionists: another holds an opinion almost the reverse. Reflecting on the great mortality that attends these early cases (and in this town the fifteen first cases all died) they set them down not only as genuine but as uncommonly virulent, each being, as they think, the focus of a more than ordinary quantity of contagious matter whence the succeeding cases arise—an opinion more reasonable in appearance, but as devoid of truth as the other. In this town great numbers were most freely exposed to the first cases, many of which died at home surrounded by their family and neighbours

who took no precautions to avoid the disease and yet remained exempt. In the case for example of Clegg, whose skin from the malignity of the attack had acquired the deepest bilberry tint, when I went into the house six women were engaged in washing her corpse in a room in which they could with difficulty turn themselves, and with the door and windows shut, yet none suffered, nor did any one of the other first cases become the centre of a contagious circle in the surrounding vicinity. It is indeed marvellous to read in the fanciful pictures of some writers, how the disease is in the habit of making a regular daily progress of so many feet per day.

Again, although in a large town like this, it can seldom happen that an individual is placed in circumstances that render communication impossible or nearly so, a few cases of this kind there are in the Tables one of which that of Peter Burns, a hawker, deserves especially to be noticed. Burns had been confined at home with fever for a fortnight before his removal on the 18th of June to the Fever Wards, where no cholera patients were admitted: on the 2nd of July when he was convalescent, besides his own portion of meat for dinner, he ate with a voracious appetite what the other patients left, a great part of it being fat. The day after he had thus overloaded his stomach he began to complain of severe pain in the bowels: the peculiar symptoms of malignant cholera followed and he was carried at midnight to the Knot-Mill Hospi-

tal where he presently expired. The case was perfectly insulated: no fever patient took the disease. Now Burns was without friends: not a soul came to inquire for him during the whole time of his seclusion in the Wards from his entrance in fever to his being carried out in cholera, a period of more than three weeks, (exclusive of the fortnight's previous confinement at home,) and he had never been outside the walls of the institution. Communication in this case was therefore utterly impossible.

But the outbreak of the disease in the New Bailey prison, which although it stands in Salford is at least as much the Manchester as the Salford prison, presents a still more interesting example of the origin of the disease without the possibility of communication. For the authenticity and accuracy of the facts connected with this example no other pledge is necessary, than that we are indebted for a knowledge of them to Mr. Ollier the surgeon to the prison. As soon as the cholera appeared in Manchester, every precaution was taken to prevent its introduction into the jail. Each prisoner on admission, before he was classed with his fellow-prisoners was washed and frequently inspected during a quarantine of five days: he had besides an entire change of clothing, and his old clothes were subjected in Dr. Henry's apparatus to a dry heat of at least 208 degrees, a process which was intended to decompose the contagious virus—

should there be any—and would most certainly destroy any vermin they might contain. The diet of the prisoners was at the same time improved. On the 7th of September, however, that is nearly fifteen weeks after the first Manchester, and seven after the first Salford case, a misdemeanour prisoner who had been in the jail three weeks,—had passed through quarantine,—had not communicated with his friends even by letter—(the jail at that time being otherwise perfectly healthy) was found by Mr. Ollier labouring under all the characteristic symptoms of cholera, of which he died in three days. At seven o'clock on the following morning a convict prisoner, in so insulated a building of the prison that he could not have even seen the other man, was suddenly attacked. From that time malignant cases occurred daily and diarrhœa became so frequent, that the labours of the tread-mill were obliged to be suspended. In about five weeks the disease left the cells of the male prisoners. During four of these five weeks, the female side of the prison continued exempt, but on Sunday the 7th of October, a convict woman who with a child at the breast, had been in prison for three months, and had held no intercourse whatever with the male prisoners or with the females lately discharged from the quarantine ward, was after diarrhœa of several days continuance, seized with the genuine symptoms. Her life was in jeopardy for two days, but she recovered. From the 12th to the 18th

when the disease disappeared, other females of *separate* classes were attacked, all of whom had been in the prison for at least four weeks. During the whole visitation there were sixty-five cases, nineteen deaths and forty-six recoveries.[a]

Nor am I less convinced that the disease arose without contagion in the Workhouse of this town than in the Fever Wards or Prison. The workhouse which stands on an eminence of considerable elevation, is a large and commodious building and contains between six and seven hundred inmates. Of these, six men were seized, who occupied a room in a new part of the house: they all died. Those last attacked communicated with the first, but the first had not been exposed to any infected person. He had only talked to the driver of the cholera-van, who had come to take away the hospital coffins which were made in the workhouse, the van-driver being at the time and continuing in perfect health.

It may possibly be objected to the spontaneous cases of the Tables (for those of the New Bailey will hardly be disputed) that the evidence by which the non-communication is established is negative. While this often repeated, but perhaps not well understood objection cannot be denied, it is important to remark that the case is widely different from what it would be if there were any conflicting

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[a] See the London Med. and Surg. Journal No. 41.

evidence, if what is asserted concerning the self-same facts by one class of witnesses who alone could know the truth of their affirmation, were merely denied by another. In the circumstances before us the absence of all contrary or contradictory evidence invests this negative with almost all the force of positive or direct testimony, and I may add that it would be neither reasonable nor philosophical to reject the only kind of proof of which the subject admits.

Lastly, our confidence in the veracity of the witnesses to the non-communication of the series of spontaneous cases, strengthened as it is by the reflections and examples already adduced, is still more strongly sustained by the manifest influence which certain localities have had in the development of the disease. This will be more fully shown hereafter. It may be observed in this place that the cases occurred either in clusters remote from each other, or in detached seizures dispersed over the intervening ground. Now wherever they occurred in clusters, the presence of some considerable source of malaria was usually manifest and striking (as in Allen's court) sometimes existing in a concentrated and sometimes in an extended form : on the contrary where the disease was solitary and dispersed, then the source of malaria, though still distinct, was proportionably less recognizable and of a more feeble and limited character. The truth of this remark will appear from a comparison of the chart with the tabular cases.

Since then it cannot be doubted that the cholera sprang up originally in Manchester of its own accord, and afterwards appeared in street after street and quarter after quarter without contagion, till it was in possession of the greater part of the town, it may be asked what have been the exceptions to this mode of propagation,—a question which cannot be answered till a reply is given to another, what ought to be considered as satisfactory evidence of contagion in any given case?

As it appears from the trials made expressly to determine this point by the French and German physicians,[a] and from the numberless instances of casual inoculation by cuts and punctures inflicted during post-mortem examinations,[b] that cholera is not an inoculable disease, its contagiousness can

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[a] Consult 'Brierre de Boismont's Relation Historique et Medicale du Cholera Morbus de Pologne'. Among these physicians were Dr. Jannichen of Dresden, and Drs. Foy, Pinel and Verat, of Paris.

[b] I have cut myself three several times with a scalpel bathed in the fluids of as many cholera dead-bodies without injury: the last time, Mr. Lyfe, assistant to my colleague Mr. Partington, likewise cut himself without any bad result. The only apparent exception to this immunity is that of Mr. Penman, the house surgeon to the Sunderland Infirmary. This gentleman punctured himself twice in a post-mortem examination: to one puncture he immediately applied the suction of an exhausting syringe and it did not inflame; the other, which was left to itself, inflamed, and the inflammation ran along the absorbents towards the axilla. In two or three hours he was taken with nausea, diarrhœa, and slight

admit in no case of that certainty which arises from the evidence of experiment. It is obvious too that while non-communication, if it be established, proves beyond a doubt the absence—communication on the contrary does by no means with certainty prove the presence of contagion. There are indeed writers who, confounding communication with contagion, use them always as convertible terms, and reasoning as if the idea of contagion were necessarily involved in that of communication, straightway conclude the former whenever the latter can be made out by satisfactory evidence. But this is an error not less palpable than that opposite one, the offspring of an exorbitant scepticism, that contagion can in no case be proved unless it can be shown that the agent which produces the spontaneous cases is not present. As this is impossible in any case, the inference would follow that contagion, except in the instance of direct inoculation, is incapable of proof. The truth however appears to be, that in the classification of the contagious as in that of the spontaneous cases, we must content ourselves generally with a degree of knowledge which falls far short of absolute

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spasms which gradually went off. These symptoms cannot be with certainty ascribed to the absorption of the poison of cholera, because the inflammation of the lymphatics of the arm together with the alarm produced by the incident are sufficient to account for them.

certainty. Our guide must be the analogy of those diseases which, being inoculable, are therefore indisputably contagious; but even then no sweeping conclusions can be drawn embracing masses of cases, because inoculable diseases themselves are far from being propagated by contagion alone—since cases here also occur in the absence of all communication, their number varying in various epidemics. Thus the evidence is reduced to a scale of probabilities the highest of which stands below that of inoculation, while the lowest touches a third series of cases, to which I have given the name of *equivocal*, because with respect to these the arguments for contagion on the one hand and for spontaneous origin on the other are so nicely balanced, that it is impossible to say to which they justly belong. It follows however from this view of the subject—a point which appears to me to be of the utmost moment—that each individual case must be separately studied, and stand, if I may use the expression, on its own merits.

In the course of the Manchester epidemic it must be admitted that there were but few specimens of contagion accompanied by the highest degree of probability. This may be defined to be, when a person labouring under cholera carries it into a salubrious situation till then exempt, where one or more persons after communication sicken of the disease. The probability reaches its acme if several sicken in succession. The case which without

answering, came perhaps nearest to this definition was that of Ellen Gordon. This woman assured me she was quite well when Anna Walker, an aunt of her husband's, arrived in Little Ireland where Gordon lived. Walker was suffering from severe diarrhœa and vomiting, which she accounted for by relating that she, her husband and ten others had travelled from Sheffield to Liverpool with the intention of emigrating to Van Diemen's Land,—that they had not been long in the lodging-house where they slept before several of their number were seized with cholera, of whom two had died in the house and two were dying in the hospital—and that she, terrified by what she had seen and was beginning to feel, left her husband to make the best of her way back to Sheffield. She staid four or five days and slept with Gordon, who before her seizure spoke to her husband of the peculiar smell she perceived from his aunt. In two days after Walker's departure, Gordon was attacked. A lodger and Gordon's husband were likewise taken with diarrhœa soon after the wife. Now here one of the conditions for establishing the highest measure of probability of which contagion is capable was wanting, for the locality as we have already seen had been predicted, before the arrival of cholera, to be one in which from its insalubrity the disease might be expected to rage, and two cases the Cavanaghs had already occurred there at no great distance from Gordon's which seemed to depend on a local cause

of malaria contiguous to the house. Had Gordon lived close to Cavanagh, the doubt as to the contagiousness of her case would have been still greater, and her sickness might have been plausibly maintained to have been only accidentally contemporaneous with Walker's arrival.

The degree of probability next to that we have been considering, and differing but little from it, arises when a person in health leaving a residence where the disease has not appeared, communicates freely with an infected case, and on returning home is taken with the disease. But here also as well as in the previous example, the force of the evidence is materially affected by the attendant circumstances, and it is the character of these circumstances, serving to illustrate both the preceding and the present degree in the scale of probabilities, and seeming to form what is so often assumed without the slightest shadow of proof, a true chain of contagion, which adds peculiar interest to the instance I am about to adduce. James Falkner a fine stout old man a sawyer, who lived at 42, Back Ancoats-street, began to show symptoms of cholera on Thursday, June 21st. His wife on the Monday following had one of those overwhelming attacks which come on in the form of fits. She died on Tuesday. On Wednesday, Elizabeth Nimmo, a relation by marriage who resided in Bk. Spear-street, at a considerable distance from Falkner, that street being at the time free

from the disease, went to assist in washing the dead body of Mrs. Falkner. The day following she was seized at home with the disease and died in four days. George Nimmo the husband of this woman, who lay by her side the first night of her illness, was attacked the day after his wife and survived her only two days : their married daughter E. Falkner, who lived with them, had severe diarrhœa dating from the day of her father's death. In another apartment of the house on the same floor with the Nimmo's lived a family of the name of Barlow. When Mrs. Nimmo was in a state of collapse, Mary Barlow, the mother went into her room for a moment, and offered her the pipe she was smoking which was refused. Barlow always declared that this was all the communication she ever had with Mary Nimmo during her illness, but I have reason to believe that she had seen George repeatedly. On the third of July, the day after Mary Nimmo's death, Mrs. Barlow suddenly fell ill and died the next day, and a day or two after her death her husband was taken with premonitory symptoms which with great difficulty were prevented from running into collapse. At some distance from Bk. Spear-street, in Friday-street, a street likewise hitherto unvisited by the disease, lived Barlow's mother Elizabeth Isaacs, with whom lodged Mary Walker. Isaacs put Barlow into the sling when she was carried to the Hospital and washed the sheets in which she had lain. Walker assisted her. She afterwards accompanied

Isaacs and her son-in-law to the dead-house of the Swan-street hospital for the purpose of taking off Barlow's wedding-ring. The incurvation and rigidity of the finger made this an extremely difficult task, and it was not till they had been a long time immured there and used the greatest efforts that Walker at last succeeded in forcing it off. The day but one after this exposure both these women were seized at as nearly as possible the same moment of time, and both died.

Here we see such a train and combination of incidents all pointing to contagion, that the most cautious reasoner, one might think, must unhesitatingly concede its intervention. Yet even here scepticism may find what it may possibly incline to think a serious defect in the evidence, for it must not be dissembled that where the Falkners[a] lived there was a source of malaria which seems to have been the true cause of a circumscribed burst of the disease in that quarter, to which Nimmo was exposed as well as to the infected bodies of the Falkners, and that Nimmo's own house stood in the recess of a close and filthy court, with abominable cellars beneath, and a pile of decomposing refuse heaped against one angle of the house. Though this one case would be sufficient for the purpose of illustration I may mention two other groupes, where the first cases like the Falkners were

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[a] See plate fig. 2.

to be referred to the locality, but subsequently gave origin to others in which, with some shades of difference as to degree, there was the same probability of contagion as in the cases first related ; the first indeed was intimately connected by its situation with that of the Falkners, and constitutes the local burst to which I have just referred.

Wm. Bradley lived in a filthy naked back room on the ground floor of the house just opposite Falkner's room. They occupied the opposite sides of a small court walled in with very high buildings, and the space between them was almost entirely taken up by an unusually large open cess-pool, the effluvia from which as I can myself testify were most intolerable at all hours of the day. After several days' diarrhœa Bradley was seized with collapse and died June the 29th. Though living so near the Falkners the families were total strangers to each other, and had held no intercourse whatever. On Sunday, July the 1st the son, a boy five years old, was attacked in Scholefield's Burying-ground while attending his father's funeral, and died the following day : his mother had diarrhœa about the same time. Two women in the house on one side Bradley's (to one of whom, Mary Jackson, the attack was fatal) and one woman (Burke) in the house on the other side, who had each been exposed to infection either from the father or the son, were likewise taken. Now these cases, notwithstanding the communication between all except the first, may be

fairly ascribed to the cess-pool, because all the persons seized and those only—inhabited the two houses directly hanging over its exhalations, while there was not a single case in any of the other houses round the court. But the associated cases of Esdaile and Ashton require a different explanation. Esdaile who was Mrs. Bradley's brother, had often been with Bradley during his sickness and assisted in preparing his body for interment. He remained quite well till Monday morning (July the 2nd) when on being told of the boy's death he 'took a sudden turn' and on his way to bespeak a coffin for him, began to vomit with great violence. He was led home and from thence to the hospital where he died in a few hours. Ashton a married woman residing in a confined but clean court not far off, stood in Esdaile's entry to see him pass supported between two assistants: he just touched her. In the course of the day she had nausea and vertigo, but went out in the evening and saw Mrs. Esdaile, who breathed in her face. Ashton thought her breath was sickly, and believed from that moment that she had inhaled the cholera: diarrhœa soon after came on, and for two days she lay in a state of unconscious collapse. In Esdaile's case should we, I may ask, be justified in resisting the evidence of contagion, although there was a most filthy cess-pool close to his own door, the end house of a narrow and loathsome court (Pilling's court,) to which not long after was probably owing the death

by cholera of Buxton, a letter carrier, who lived in a room below Esdaile, but had no communication with any other case. In Ashton's case a doubt arises from the slightness of the contact, but it is instructive as it shows the influence of the imagination with respect to the choleric smell, for Esdaile's wife was at the time and remained perfectly well. Of the other group that of Bk. Hart-street, named in a former part of these observations it may be enough briefly to remark, that there is the same amount of probability here also that the disease originated in malaria, and was transported thence by contagion into two distant streets, which till that time had remained exempt. These details will be sufficient to show how entirely the probabilities of contagion depend on a variety of particulars which cannot be known without much pains, and minute investigation, and how little confidence ought to be placed on those general assertions which are the result of either hearsay, or of superficial inquiry.

Examples occur in the course of the Tables which represent other degrees of probability, to which it will suffice to refer. But there is one that cannot be passed over without pointing to it the more especial attention of the reader. It is a case nearly allied to the preceding, and arises when an attack follows a long continued or repeated exposure to infection in a locality where there is no evidence of the presence of malaria, and when therefore con-

tagion is the only cause that can operate. In such localities are or ought to be Cholera hospitals, and we are therefore accustomed almost instinctively to ascribe the seizure of the attendants of the sick in these hospitals—either medical officers or nurses, to infection. But it is argued that in order to make this test conclusive, in addition to the non-existence of any contiguous source of malaria, if the disease be prevailing epidemically the attendants attacked ought to bear some considerable proportion to the whole number either of the class or more properly of the persons exposed. In the Swan-street hospital, then consisting of one very spacious lofty upper chamber, part of a building standing on a dry and elevated site, at a time when a small number of nurses was employed, in five weeks six nurses and the hospital porter were attacked (one of the nurses Sylvester twice,) and of these, five nurses and the porter died. During this period cholera it is true prevailed if not in the direct vicinity of the hospital, yet almost exclusively on that side the town where the hospital stands. The absolute non-contagionist may therefore argue, that it is not an unequivocal example, and it may be conceded that it falls short of at least one—that, I mean which the London Fever Institution has furnished in illustration of the contagiousness of typhus fever, for while in that institution all the attendants on the sick, high and low, resident and non-resident, have been invariably attacked, no case of fever has occurred

in the Small-pox hospital which is in the same field and within a few yards of the other. If the prevalence of cholera chiefly on that side of the town be thought to weaken (though it does this in the smallest possible degree) the proof of contagion in the instance of the cholera nurses, there were one or two collateral circumstances which serve to strengthen it. Howarth a man nurse had come from the Knott Mill Hospital to assist at the other, the former being shut up for want of patients, no cases then occurring in its vicinity. The night of his arrival he sat up with a desperate case (Brookes) which he rubbed assiduously through the night: he had a fatal attack himself the following day. Another memorable circumstance deserves to be related (that will be noticed again under a future head) which seems at first sight to be hostile to the idea of contagion, but may perhaps on reflection be received rather in confirmation of it. Having discovered that the nurses who were on liberal board wages, in order to save the greater part of their earnings lived chiefly on tea in the hospital and gin out of it, together with a scanty quantity of poor and generally acescent food, after the death of Jane Buckley I proposed to the Board of Health a regulation, which it is a matter of the greatest regret had not been adopted from the commencement of the disease, namely, to forbid the nurses to leave the walls of the hospital, and provide for them within it nutritious and regular meals, according to a dietary to be

drawn up for their use by the medical committee. After the establishment of this regulation not another case of cholera occurred among the nurses, though the epidemic had not then nearly reached its acme but continued to prevail for four months after. This fact, which cannot but be regarded as most important and instructive, may be thought so far to lean towards contagion as that in the present state of our knowledge an invigorating diet appears to fortifiy the constitution with more certainty against the disease in its contagious than its spontaneous form.

Only one medical man in this town—Mr. Holroyd—has suffered an attack of the disease and this was mild; there was a threatening of collapse but it did not supervene. This gentleman was one of the surgeons attached to the Swan-street hospital and had been on the day of his seizure a longer time than usual in the wards. On the other hand his house is situated on the banks of the Irk, and therefore in a malarious locality. There has indeed been a striking difference between England and some foreign countries in the proportion of medical men who have suffered, Dr. Alsop of Birmingham, and Mr. Keane of Warrington being as far as I am acquainted, the only two practitioners who have died of the disease in the provinces of England, a mortality singularly small when compared with that which has resulted from the contagion of typhus fever, of which disease, caught in the exercise of their professional duties, Dr. Laurie tells us that within

two years and a half seven medical men have died in the single city of Glasgow. It is not easy to assign a reason for the comparative immunity from cholera of the English practitioners, nor is it possible to decide whether it is to be ascribed to the greater intrepidity and zeal of our foreign brethren, or to their having been, as stipendiary and therefore strictly responsible officers, compelled to devote a more constant and more hazardous attention to the sick, or whether this exemption has arisen from the superiority of the houses and localities in which we live, enjoying as we do a higher rank in the scale of society than is for the most part held by the members of our profession abroad.

In connexion with the hospitals as a source of contagion, a number of cases occurred in which it is difficult to say whether their unfortunate event was owing to the natural progress of the disease, or to infection imbibed within the walls of the hospital.[a] Cases were sent to the hospital which it was thought inhumanity to reject, where the symptoms were ambiguous, or consisted only of nausea and bilious diarrhœa, &c. It happened in several of these that after being a few days in the hospital, the character of the disorder changed: genuine malignant cholera with collapse came on, and proved fatal. In these cases, the milder or more ambiguous

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[a] See among others, the cases of Doran 43, Lloyd 98, Hollins 76, Bella Comerford 83, Hudson 189.

first symptoms had made their appearance spontaneously.

There was another rather numerous class of interesting cases the explanation of which is equally dubious. It was that class in which the patients after diarrhœa of some continuance, were seized with collapse soon after exposure to an infected body. At first it looked as if these patients had imbibed in this exposure, an additional dose of choleric poison, for there were several observations to show that of two persons exposed apparently to the same quantity of choleric poison, whether the source were miasmatic or contagious, in one it should produce a most severe attack rapidly terminating in collapse and in another only a mild diarrhœa. Instances of the first we had in the two Mathers ; of the last in Walker and Barlow. In this view of the matter, an additional dose of the poison might probably have the effect of converting diarrhœa into collapse. In the sequel however I observed several cases in which the same sudden supervention of collapse followed some powerful passion or emotion of the mind without any contagious communication, and on considering the other cases it appeared that in each of them besides the source of contagion such a mental cause was present. I may select from the Table the following examples. William Johnson a fine boy was playing about in seemingly perfect health at five in the afternoon when he was smitten in a moment by the disease

and died in six hours,—the most rapidly fatal case, I believe, which occurred during the epidemic. His father had been labouring some time under serous diarrhœa, when coming home he found his son in the article of death. Just before the boy breathed his last, the father caught him up in his arms in an agony of sorrow and kissed him several times. Early on the following morning he was seized himself with collapse, and died in the course of the day. William Rydyard the Swan-street hospital porter who lived in a lodge at the gates of the hospital and never went into the wards except to deliver messages, had concealed a diarrhœa for a fortnight. On Sunday the 29th of July, the dead-house being full of the bodies of the sufferers from Allen's court, he was requested to assist in placing them in their coffins and nailing these down. While so employed he was observed to be powerfully agitated: on the following day he became seriously worse and sank on the Thursday of that week. Sarah Street who lived in a court in Major-street had had diarrhœa for several days. Her house being full of ducks and poultry which were considered by the neighbours to be a nuisance, she had set her son to build a duck-house for them in the yard. This being considered a still greater nuisance they pulled it down, upon which Street yielded to a fit of furious anger. While under its influence she was seized with dreadful spasms, locked herself in the house, crawled with difficulty up stairs, and a

few hours afterwards, when a neighbour entered her bed-room by a ladder, was found lying in a state of mute and pulseless collapse. Alexander Whirk, a market gardener had had diarrhœa for a week : in a violent quarrel with his wife on the night of Saturday August 11th, he was struck with a poker ; collapse came on instantly, and he died on the following morning. In the two last examples where there was no exposure to contagion, the same aggravation of disease followed a powerful emotion of the mind, as in the two first where exposure was superadded. The effects of the passions of sorrow fear and anger are strikingly shown in these cases.

It is a point not unworthy of being considered whether the impression on a patient's mind that he has inhaled the choleric poison at the moment of perceiving a particular smell, which certainly arises from infected bodies, is to be received as a constituent part of the evidence of contagion or as in any measure increasing its probability. It has been asserted by Dr. Marsh of Dublin, no common authority, that the reception into the body of the contagious germ of typhus fever is not unfrequently accompanied by the momentary consciousness of a peculiar odour, and Dr. George Gregory speaks of a distinct but indescribable sensation as marking the entrance of the small-pox poison into the system. That the smell is the most fallible of all the senses and that the patient may be mistaken, has

been shown in the case of Ashton already mentioned, to which I may add that of Elizabeth Wood[a]—in whom a singular attack of hysteria, imitative of cholera in its progress, was imputed by the patient to a strong smell of cholera wafted through the Swan-street hospital gates which happened to be thrown open as she was reading the daily returns affixed to them. Still however there were so many instances in which 'the turn' or 'the posset' as it was called, was ascribed to an inhalation of the odour at a moment of close contact, that some weight may without credulity be attached to it.

The period of the disease in which it possesses the power of transmitting itself in the highest degree has been supposed to be the stage of the consecutive fever and that because of its typhoid character. Although this is probable, there seems to be no proof of it, any more than of the peculiar contagiousness of the intestinal discharges. My Tables furnish no clear and indisputable examples of the disease having been communicated in the stage of premonitory diarrhœa, the cases which appear to have owed their origin to contagion during this period belonging without exception to the equivocal series.[b]

The body after death seemed to communicate the

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[a] See case 94.

[b] Such as Bousfield and the Nobles, Turner and Sarah Rarnay, after William Rarnay: Cornfitt after Hope and many others.

disease in a greater number of instances than during life ; it must at the same time be kept in mind that it generally happened that the persons who were exposed to the infection of the corpse, had also been previously exposed to that of the same or some other body during life. If it were not for this source of doubt the case of Mary Comerford which I indicate in the note would be remarkable.[a] Latterly, I am aware, it has been held that the opinion of the infectiousness of the dead body in any case is unphysiological, and yet for how long a time after death do the variolous and vaccine matters and even the saliva of a rabid animal, as experiment has demonstrated, retain their powers of inoculation; nor is it possible except by disproving the facts to evade the force of such instances as those which among others Mr. Jameson[b] and Mr. Evoy[c] have recorded. The propagation of the disease in this way has however, on the whole been a very rare occurrence in the cotton-manufacturing districts. One case of the kind appears to have happened in Stockport, none in Warrington, Bolton, Rochdale, or Oldham, though in the last mentioned town the poor obstinately refused to bury their dead before the usual time.

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[a] No. 105, see also 40, 69, 70.

[b] "During a second and slight attack of Lord Hasting's force a sepoy died of the pestilence. Five of the corps, who had shown no signs of illness, were employed to convey the body to the grave. They were all seized with the disorder during the ensuing night, and all died." Madras Report p. 130.

[c] Medic. Gaz. No. 260, p. 255.

In the same way there were three or four cases in which on a superficial examination it had been inferred that the disease had been conveyed by clothes, or what have been called susceptible effects.[a] But in all these, with perhaps one exception, either the cases that followed were of the equivocal series, or the persons they had been supposed to have infected had been likewise in the way of direct contagion. The exception to which I allude (if it be one) was that of Francis Tierney who inhabited a miserable cellar in Holgate-street. On the Friday the clothes of Isabella Mather, wet with choleric secretions, were sent to his wife to wash. They came immersed in clean water, and were washed and dried in the yard, and afterwards placed in a back cellar. Tierney who blamed his wife for washing them, telling her that she would be sure to catch the disease, was well till Sunday when he ate to excess some fat beef, charitably sent him by the Jewish priest who officiated in a neighbouring Synagogue. From that time he felt uneasy, was taken with severe diarrhœa on the Monday, and died in a few hours. His wife remained well: one child was seized on the Wednesday following, but recovered. Tierney had not been exposed to contagion in any other form, but it is material to notice that in the course of the week as many as six spontaneous cases had occurred within a stone's throw of his cellar.[b]

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[a] See Nos. 103, 113, 70, 66, &c.

[b] An exposure to infected clothes followed by no bad conse-

In every case where it may have been conjectured that the disease has been transmitted through the medium of a healthy person, the probabilities must be so much in favour of spontaneous origin, that this kind of transmission even if it really took place would be incapable of proof.

Upon the ground then of the distinctions and reasoning laid before the reader in the foregoing remarks, the number of the contagious cases may be thus briefly summed up. There were in the two hundred, twenty-six cases of contagion in all, that is nineteen exclusive of the Swan-street hospital nurses. These nineteen cases carried the disease into three new vicinities and nine new streets. Of the hundred cases not edited a still smaller proportion—eight only—were derived from contagion.

EXTENSION OF THE DISEASE BY EQUIVOCAL CASES. —It will be observed that there yet remains to be arranged a not inconsiderable proportion of the whole number of cases. In the same way as I have called the cases of miasmatic origin spontaneous merely to express the fact of their arising

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quences happened during the riot at the Swan-street hospital. When the mob broke into the hospital, the medical officers, nurses, and several of the patients made their escape. One nurse, an Irishwoman, who could not get away in time, jumped into a bed which had just been left by one of the patients, covered herself up, and began to writhe and groan, as if suffering from a violent attack of cholera. The intruders looked at her, uttered some words of pity, and went away, without suspecting the imposture.

without communication, I have distinguished the third and last series by the term equivocal simply to indicate that the evidence for and against their contagion is so far equiponderant, that they cannot with propriety be assigned to either of the other classes. To one of them they must in every instance necessarily belong, but to which we are without the means of deciding. This concluding series is chiefly composed of persons who were members of the same family or inhabitants of the same house, and who fell sick two, three or more in a house, not simultaneously, (for then in the absence of communication from without they would clearly belong to the first series,) but in quick succession. The difficulty of selecting the proper place for such cases will appear in the judgment of many to be a mere refinement. They will distribute them without hesitation among the contagious series.[a]

In these family cases there is, it is to be presumed at least, always communication after the first case: but while there is exposure to contagion there is at the same time in all those instances where the first case has arisen spontaneously, exposure to the terres-

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[a] Dr. Craigie on the contrary, Ed. Med. and Surg. Journal cxv. p. 370, would add them to the spontaneous series. "In the short space of two hours, six, eight, or even twelve hours, it is impossible to believe that a poison can be generated in the human body, emitted from it and communicated to the frame of a healthy person, so as to produce all the morbid phenomena, which had

trial poison which has produced that first case ; and this is true whether there be a palpable and cognizable source of malaria or not, although the truth will be more readily appreciated when such a source is apparent. This proposition, which cannot well be disputed, will be acknowledged to throw a doubt over the contagiousness of those cases which fell sick nearly contemporaneously in the same family, while its force may be denied when applied to those where there is a pretty regular succession at such intervals as come within the period of incubation which experience has shown to be observed by cholera. But the denial appears to rest on no sufficient grounds. While the synchronous seizure of many persons in the same locality who have had no intercourse is a decisive proof of the presence of miasm, the succession of cases with communication in the same house, is no certain evidence of the agency of contagion. For first; supposing—as there is every reason to believe—that the period of the incubation of the telluric miasm is the same as

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only commenced a few hours before in the system of the individual who is supposed to have communicated the poisonous principle." Yet in India, cholera sometimes ran its entire course in three or four hours : in the case of the boy Wm. Johnson, No. 88, the boy was well and dead in six hours, and in several of the cases where the attack assumed the form of a fit, collapse or the complete formation of the disease appeared to be instantaneous. When the disease can be fully formed with such extraordinary rapidity, it follows of necessity that, if it be contagious at all, the contagion may be transmitted with the same rapidity.

that of the contagious matter,—the succession may depend simply on the successive application of the miasmatic poison, since there is no more reason why it should invariably be applied all at once to all or several members of a family, than why the matter of contagion should be so applied. Secondly ;—the succession as it may depend on the variation in the time of application, so it may depend in some instances on the varying degrees of the intensity of the miasmatic poison. Thirdly ;—it will be materially influenced by the state of susceptibility of the recipient, no more prepared to be acted on equally at all times by miasm than by infection. Fourthly ;—what however most probably determines the succession of the cases more than all the preceding influences, however real, is the difference of the intervals of time that elapse between the reception of the germ and the operation of that exciting cause—whatever it may chance to be—which calls the germ into activity and developes the latent disease. The Tables might furnish many illustrative examples : to avoid prolixity I shall adduce one only. In a very confined court called Redfern's Buildings, Mary Boyd nine years old the daughter of a poor shoemaker, was seized with the premonitory symptoms of cholera on Wednesday morning June 27th. On the following day (28th) her brother and sister went out in the evening and ate a large quantity of refuse gooseberries which they had picked up in the Shude-hill Market :

they sickened between nine and ten that evening. On the day but one after, the father was seized: he had abandoned himself that morning to the most entire despair—for the people of the court had expelled him from it the day before, and he had just shared the same treatment from the neighbours of his brother to whose house he had been invited, so that he found himself suddenly a homeless outcast, and his children all in the Hospital without the hope of recovery. Here was a succession, in which if it be supposed, and there is no means of proving the contrary, that the germ of the poison which without any communication affected Mary entered about the same time into the system of her brother, sister, and father, we see a probable reason why it was not developed in the children till one day, nor in the father till four days after her attack, without being at all driven to the necessity of resolving the case into one of contagion. The germ might have remained altogether quiescent in the two children but for their error of diet, and in the father but for the extremity of distress which fell on him, or the intervals of succession might have been reversed had the father's despair come upon him earlier, or had the decayed gooseberries fallen later in the way of the children. I must add that in this case there were local sources of malaria and proofs of its influence. On the day on which Joseph was seized, the two Mathers who lived two doors off in the same court had a spontaneous attack which proved

fatal in both, and the woman who inhabited the house back to back with Boyd's, died likewise of cholera soon after without communication.

If it would be unjustifiable to conclude, whatever might be our first impressions, that on account of the free communication between the members of Boyd's family, and because of the successive and somewhat regular development of the seizures, they were owing to contagion, on the other hand it would not be less rash dogmatically to deny its influence. For the reasoning which we have applied to miasmatic, has exactly the same force when transferred to contagious poison, and there is besides in favour of contagion the analogy furnished by the progressive manner in which inoculable diseases are propagated in families, an argument weakened however first, by the fact that even inoculable diseases spread without communication to a far greater extent than is commonly imagined, and secondly, by the observation that diseases indisputably miasmatic as marsh fever manifest the same successive development ;[a] and it is precisely on this uncertainty that rests the necessity of forming such cases into a series by themselves, apart both from those in which the origin is clearly spontaneous or clearly contagious. It will be obvious on the slightest reflection, that the exciting causes which may call the latent germ into active oper-

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[a] See Dr. Gregory's very interesting paper 'On the period of incubation of various morbific germs.' Cholera Gazette ii. p. 54.

ation at different intervals of time in different individuals composing a family, such as sorrow, alarm, and the intemperance which among the poor is too commonly resorted to for the dissipation of the former, exercise their influence *after* the seizure of the first case. Thus causes sufficient to produce a train of attacks without the aid of contagion are almost always at work, and the surprise is that in so many families a single individual alone should suffer. I have had no solicitude either to increase or lessen the number of these equivocal cases. One or two are placed among the spontaneous which, without attention to the details, might be thought to belong to the third series, that for example of the second of the two Hannah's of Back Irk-street. The elder sister Anne Hannah was seized on Friday, July 20th : her younger sister was out at the time, and did not come home till after Anne had been carried to the hospital where she died, and her sister saw her no more. Her bedding was quickly removed. The youngest sister Margaret, however, was seized on the Monday following and died in twelve hours. It is remarkable that the common sewer, which holds a subterraneous course till it gets opposite the door where they lived, escapes by a large aperture of masonry just at that point, and then continues to flow above ground to the bottom of the street when it enters the Irk. This fact turns the balance in favour of a miasmatic origin. On the other hand, when the first case of a family

has been traceable to contagion, as in the case of E. Nimmo, I have considered this circumstance to incline the scale towards infection in the rest of the seizures in the same family. The sum total of the equivocal cases of the Tables is fifty-seven; of the unedited cases twenty-eight. The number of families or houses in which two or more individuals were attacked simultaneously or in quick succession is as follows:

In	1	house	6 individuals, making	6
	3	houses	5	15
	4		4	16
	4		3	12
	22		2	44
				93

Thus in 107 houses one person only was attacked. The proportion of families in which two suffered will be observed to be five and a half times as great as that in which the next number three were attacked. Concubation, if I may be permitted to use this word, is without doubt the chief reason for this disparity, a disparity which strengthens all that I have advanced on the subject of equivocal cases, because the precise similarity of circumstances as to locality in which persons live who occupy the same bed, is as much in favour of the opinion that both owe their disease to a common miasmatic poison, as the closeness of their contact is that one has contaminated the other.

On the causes of the disease and chiefly its secondary causes.—Adhering then strictly to the facts which the investigation of these 300 cases has supplied, it will be seen that while contagion has exercised a real but very feeble influence in the spread of the Manchester disease, its dissemination has been largely owing to causes perfectly independent of contagion, the spontaneous cases being to the contagious as four and a half to one. I have already said that the term spontaneous has been employed merely to express the absence of communication. I have however at the same time assumed that this class of cases depends on a miasmatic cause, not without interspersing as I have proceeded facts in corroboration of this view. Is there then one cause for the contagious and another for the spontaneous cases? or does not the perfect identity of the disease, notwithstanding their diversified circumstances of origin, suppose a perfect identity of cause?

It is necessary for the sake of perspicuity to distinguish the cause of the disease properly so called, that is the *efficient* cause from the *secondary* causes. By the efficient cause is meant the unknown deleterious agent which acts like a poison on the alimentary canal, and on the nervous system, and gives rise to that sequence of morbid events of which the disease consists. Its presence is necessary to the existence of the disease in every instance. On the other hand the secondary causes which may be

divided into generating, predisposing and exciting, although exerting their united force, cannot give rise to a single case in the absence of the efficient cause, while they perform a most important part in favouring its development or extending its effects. When the disease is transmitted by contagion, the deleterious agent—the true cause—must necessarily form a part of the fluids whose exhalation it accompanies or from which it escapes, and we therefore seem to have it under our eyes. But it is nothing more than mere semblance: for as it eludes every attempt which even chemistry,[a] the most successful of all the sciences, can devise for its separation, we in reality know no more of the contagious matter of cholera than of the poison which produces the spontaneous cases. Not that this mystery is at all peculiar to cholera. Nothing more is known of the efficient cause of small-pox where the poison is superadded to the purulent matter contained in minute abscesses, for this matter does not differ in its ascertainable component parts from the puru-

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[a] During the prevalence of cholera in London, Dr. Prout found the air, he says, to be heavier than usual, and ascribed the difference to the choleric poison, but if this had been ponderable matter, it might have been separated and examined. No very sanguine hope can be entertained of detecting the miasms which produce disease, when Dr. Dalton scarcely finds in the atmosphere of Manchester an appreciable increase of carbonic acid, notwithstanding the tons of this gas which are vomited forth from so many colossal chimneys every minute of the day.

lent matter of a common abscess, while the vaccine lymph which possesses the extraordinary property of protecting the body against its pernicious agency, consists as far as experiment can show its constitution, of a little albumen and water. In addition to the morbid phenomena to which the specific poisons respectively give rise, the only other fact which is known of them is the greater or less affinity which each seems to possess for some particular fluid of the body, as that of hydrophobia for the saliva, of variola for purulent matter, of typhus fever for the pulmonary transpiration, and of cholera, (though this as I said before has been rather conjectured than proved,) for the seroalbuminous discharges.

The same impossibility of submitting the poison to chemical tests belongs to the miasmatic as to the contagious dieases. That ague is produced by marsh exhalations is a fact scarcely less certain than that small-pox is produced by variolous matter, but the miasm of ague is equally subtle and incoercible. It is the same with remittent fevers the cause of which is not unfrequently extricated in autumn, according to a curious and well founded observation, from the same swamp which generates that of ague in the spring. Again, that typhus fever may be often traced to the effluvia of excrementitious matter there are few practitioners who do not know to be true, but experiment satisfactorily shows that it is not the ammonia and sulphuretted hydrogen evolved from such matter that are the

sources of it, and the peculiar poison—the typhogen—is inscrutable to the most patient researches. Thus at the outset of the inquiry the analogy strikes us that both in contagious and miasmatic diseases we know only more or less of the subordinate substances with which the poison is associated, but nothing of the poison itself.

There is therefore at all events nothing contradictory to the hypothesis which the more I reflect upon it, appears to me to be the more probable, that the miasm which produces the spontaneous attacks of cholera is precisely the same matter as the poison which in contagion transmits the disease.

1.—The strongest argument in support of this hypothesis undoubtedly arises from the perfect resemblance of the morbid phenomena in the communicated and uncommunicated cases. Such an identity of itself almost justifies the conclusion of an identity in the efficient cause. It would be too absurd—considering the vast number of the spontaneous cases—to ascribe them to the internal generation *de novo* of the choleric poison. Even they who admit what I was going to call so impossible a circumstance consider its occurrence to be as rare as that of spontaneous combustion. What does it suppose? that the antecedent of a train of morbid phenomena arises somewhere in their course; a proposition which the terms themselves show to involve an irreconcileable contradiction. Either however the poison generates itself within the body

or passes into the system *ab externo*, for there is no other alternative. Disengaged from its malarious combinations the most reasonable conjecture is, that it is absorbed into the body by the skin or mucous membranes, circulates with the blood which it decomposes, is thrown out with the morbid secretions and exhalations to which it gives rise, and then may or may not according to the presence or absence of a variety of contigencies be transmitted to another body, in which, retaining its identity, it will necessarily produce a repetition of the disturbances which it has occasioned in the body primarily affected. According to this view the contagious matter of cholera is only the choleric miasm in a new combination.

2.—That the spontaneous cases depend on a miasm *sui generis*, the history of the disease on a large scale shows in a convincing manner, for the known sources of malaria are among the secondary causes which generate the choleric poison, and by which, in the great majority of instances at least, its *quantity* seems to be determined and regulated. Its geography consists of a long succession of malarious sites—jungles, and deltas, the banks of canals and of rivers, especially tidal rivers, (the vegetation on whose borders is alternately covered and exposed,) ports, docks, and the alluvial shores of maritime towns: while the smaller details of its progress have been marked at sea by foul ballast, or filthy bilge-water, and on land by drains, cess-pools, load-

ed sewers, ditches, stagnant ponds, and the almost endless variety of nuisances that in large towns are allowed to accumulate unobserved till the arrival of a pestilence reveals the extent of the evil. To some not uninteresting details of this kind, those especially exhibited in the Tables, I shall presently direct the attention of the reader. But the remark is made in this place chiefly for the purpose of adding, that the same commixture of spontaneous and contagious cases, arising probably from the same identity of cause—first the passage of a specific miasm from the earth to the body, and then the occasional transmission of the same miasm from body to body,—marks the propagation of every epidemic disease which has the reputation of spreading by contagion. This double form belongs to the inoculable diseases and the spontaneous cases of small-pox in a variolous epidemic, when the disease shall be investigated according to the severe rules of evidence to which it has been my endeavour to submit the investigation of cholera, will be found far more numerous than they are at present supposed to be. Their number will almost furnish some excuse for the ignorance of Sydenham who, not aware of its contagious nature, ascribed small-pox altogether to a 'secret venom' in the bowels of the earth. The two other exanthematous contagions scarlet fever, and measles, to which hooping cough may be added, will be seen, if I may judge from the observations which I have hitherto made upon them, to afford still

clearer evidence of this truth. Of the origin of typhus fever by miasm, and its subsequent propagation by contagion, the practice of the Dispensary with which I am connected supplied a striking example in the autumn of 1831. The cases of typhus fever that occurred in the township of Chorlton-upon-Medlock at that season were almost numerous enough to constitute an epidemic. The cottage property there consists of rows of small houses, with a convenience placed between every ten houses and separated from the house on each side only by a thin partition. In summer and autumn, especially after a shower of rain, the effluvia from these necessaries are insupportable to the people in the lateral houses, and it was in these houses that the first thirteen cases occurred.

3.—It is evident from the history of epidemics, happily now extinct, that they presented the same twofold aspect, in which we see the reason of the vehement controversies on their causes that disturbed the harmony of the medical world in those early days, precisely as modern physicians have been agitated by discussions concerning the propagation of plague, yellow fever, and cholera, all of them exhibiting in their progress the same blending of cases—though the proportions vary in each. Of this double character was leprosy, a disease both endemic and contagious in Palestine, and in other countries of the East, and which raged so fiercly during the thirteenth century that according to a

contemporary historian, Matthew Paris, there were then in Christendom one thousand nine hundred hospitals for the reception of lepers: such also was the sweating sickness, of whose two-fold mode of dissemination the account of Burserius leaves no uncertainty. The list might be easily lengthened but I will content myself with one more example in that singular disease the pellagra, undeniably miasmatic in its origin, and as certainly occasionally contagious in its progress, a disease which according to the testimony of Brocchi was never known in Lombardy, now infected by it, till the cultivation of rice was introduced into that fine and once healthful province at a period comparatively recent.

While the vast body of epidemic diseases are both miasmatic and contagious, and spread under this double form (the efficient cause being the same in both, existing only in a different state of combination,) the simply contagious diseases as psora, tinea, hydrophobia &c. do not assume the epidemic character. Hydrophobia however in the dog is probably of miasmatic origin and where siphylis was endemic as in St. Domingo, or when it became frightfully epidemic as upon its first appearance in the Old World, there are circumstances which give a colour of probability to the ancient opinion, that its sudden and extraordinary diffusion was owing to other causes as well as to contagion. It was the persuasion of contemporary observers that sexual intercourse was not then an

absolutely necessary condition of its propagation, and sanatory regulations were established upon that persuasion. The year of its devastation too was marked by a greater and more general inundation in Italy than has been experienced either before or since: the Tiber rose twenty-four feet above its ordinary level, the highest excrescence upon record, and the streets of Rome were navigable.[a] Nor can we otherwise account for the almost incredible number of persons of both sexes of every character, profession, and rank in life who, in an age not distinguished by any uncommon licentiousness of manners, were the victims of this loathsome disorder; or for the amazing rapidity with which it overran in a few months Spain, Italy, France, Germany, and a great part of Russia.[b]

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[a] They who are aequainted with Rome will know that there are two public places where the various inundations of the Tiber are inscribed, one the Porto di Ripetta, the other the front of the church of Sta. Maria in Minerva. It is there that the inundation of the siphylitic year is marked at twenty-four feet.

[b] Leonicenus of Vicenza (1497) the friend of Scaliger and, in the esteem of Caleagnini, 'vir æternitati natus,' thus describes the floods of that year. "Eo anno quo morbus Gallicus cœpit pullulare, magnam aquarum per universam Italiam fuisse exuberantiam. Testis est Roma quæ primum (id) malum sensit, in quâ Tybris intumuit ita ut tota facta navigabilis. Nec aliter quam in Romano Tybris, in agro etiam Bononiensi Rhenus, in Ferrariensi et Mantuano Padus, in Venetiâ Athesis, &c. &c." Fracastorius, the highest authority of the time says, "Maximam mortalium partem e contagione malum hoc contraxit, sed observatum fuisse

Lastly, the general analogy which exists between the diseases that are strictly miasmatic, as ague and remittent fever, and the epidemics of which I am speaking, is another fact favourable to the identity of the efficient cause in both the spontaneous and contagious cases of these epidemics. Both have a period in which the germ is quiescent: both run a certain course: the miasmatic are even, notwithstanding the derision with which the opinions of Dr. Cleghorn and Dr. Fordyce have been treated, capable of being transmitted by contagion. Mr. Mewins assistant surgeon to the forces, in a recent official report to the army medical board, speaking of the intermittent fever of the island of Heligoland says 'I have on several occasions had an opportunity of observing a contagious influence under its more malignant type.[a]

There are two other topics which suggest themselves at this part of the subject, namely the quali-

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innumeros alios sine ullâ contagione per se infectionem illam perpessos fuisse nam impossibile alioquin fuisse, tam parvo tempore, contagionem quœ per se segnis est, nec concipitur facile, tantum terrarum peragrasse ab unâ classe ad Hispanos primum delatam, quando constat aut eodem tempore aut fere eodem et in Hispaniâ, et Galliâ et Italia et Germaniâ et tota ferc Scythiâ visam fuisse. (De Morbis contag. l. 2. c. 12. apud Astruc.") The double mode of diffusion was at that time thc prevailing opinion: " Demum ab aliis ct sponte contrahi, et contagionc simul propagari; quæ opinio diu viguit." (Astruc. p. 539.)

[a] Med. Gaz. vol. 2, pagc 700.

ties of volatility and contingency (if I may speak of the latter as a quality) which have been attributed to the contagion of cholera. It is to the greater degree of volatility of the contagious poison, or its mobility, to use the word of Orton, that the absolute contagionists ascribe the celerity of its diffusion over a given space. But first, even if the poison were thus volatile, its source would not be determined to be contagious, since the volatility of the terrestrial miasms would produce the same effect, and who could decide to which the diffusion was owing? In such examples as that of Manchester where the contagious have borne so small a ratio to the spontaneous cases, if the general atmosphere were poisoned to any extent, the contamination must have been chiefly derived from malarious sources. Secondly,—the influence of the supposed volatility of the choleric poison in spreading the disease is rendered highly improbable by the very limited sphere of operation within which the other specific poisons are confined. The subject may not have been examined with all the precision it requires and deserves, but according to the observations of Haygarth and the experiments which he cites, the variolous contagion is innocuous at the distance of a few feet from its source, and Dr. Ferriar arrived at a similar conclusion with respect to the contagion of typhus, so that the air by diluting the poison is to be looked upon not as the channel for applying it, but the providential means

of its dispersion and loss. Thirdly,—if the rapid spread of this pestilence were owing to the volatility of the contagion, its effects would be produced with order and uniformity both as to time and place, accompanying the course of currents and of winds against and in the face of which, on the contrary, the disease has been in very numerous and striking instances seen to spring up; not as in this town manifesting itself in masses here and there, with straggling cases in the intervening ground or large spaces entirely exempt but affecting greater numbers in regular succession, irrespective of rank, locality and every secondary cause. Fourthly,—the omnipresence of the choleric poison, which would result from this imaginary volatility, would convert free ventilation which is acknowledged on all hands to be the most powerful means of shutting out an attack of the disease—into one of the surest measures of inviting and detaining it, by the admission of a larger quantity of the volatile poison. Penetrating too not only into every private house but into shops and warehouses, instead of the entire immunity from infection which merchandise has happily hitherto enjoyed, articles of such fancied susceptibility as woollen and cotton manufactures could not fail to exhibit sooner or later some traces of its subtle visitation.

It must be confessed however that while miasm and contagion without any general pollution of the atmosphere, or what is sometimes called in lan-

guage conveniently vague and indeterminate, the epidemic constitution of the air, will be sufficient of themselves to account for the spread of the disease in its marked and genuine form, they do not afford so satisfactory an explanation of the great number of milder and anomalous disorders of the digestive organs, which have almost everywhere occurred, especially about the acme of the epidemic and to which the name *cholerine* has been given by the French. That a great proportion of these cases may be fairly attributed to mental causes, such as panic, anxiety, sympathy, is highly probable from the hysterical form they are apt to assume in the female sex.

The epithet of contingent as applied to the contagion of cholera if it mean no more than that certain conditions must be fulfilled before the disease can be communicated, is equally true of the inoculable contagions. If it be meant that cholera not being originally contagious, may become so under certain circumstances from filth, crowding, &c. this kind of contingency remains without proof and is liable to the powerful objection which I have already stated to the doctrine of self-generated contagion into which it resolves itself. These or other circumstances may produce an act of contagion by predisposing the body and applying the poison, but they cannot singly or by any combination create it, any more than they can give birth to hydrophobia without the bite of a rabid animal. It

is possible that every case of cholera has the inherent power of propagating others, provided all the other necessary conditions for its propagation were present, nor is such an opinion at all in contradiction with the fact that cholera spreads on the whole without contagion, for the proposition that a disease is contagious and spreads without contagion is paradoxical only in appearance. It is likewise however conceivable, that in some cases the affinity of the choleric poison for the fluids of the body may be far greater than in others, and that where this affinity is greatest the poison will cling to them with such tenacity, as to prevent the disengagement of any portion of it. Such cases would be absolutely non-contagious, and the contagion of cholera would then become contingent in a new sense. Some examples of extraordinary exposure and escape would be far more naturally explained by this view than by the doctrine of susceptibility.

On the generating causes.—I wish to indicate by this name which I feel not to be happily chosen, those secondary causes which relate to the production of the specific miasm of cholera. They are generally confounded with the predisposing causes improperly—because, although by depressing the general health, they undoubtedly predispose the body to receive the poison, they operate chiefly by supplying the poison itself. These causes are marsh effluvia strictly so called—and effluvia without recognizable marsh from the decomposition of vegetable

and animal matter and especially the excrementitious products of men and animals. I have already touched upon some of the general proofs of the influence of marsh. The writings of Orton and Searle contain a vast body of facts in attestation of the reality and strength of this influence, and the morasses of Ireland have afforded, and unhappily continue daily to afford, many more. One of these calculated to remove the doubts of those who may be inclined to undervalue the force of this cause, I may briefly mention. The sixty-eighth Regiment, in the June of last year, was stationed at Clare Castle. This castle is situated upon a small island in the Fergus—an arm of the Shannon,—and is surrounded on all sides by swamp and mud, the tide running underneath its walls. Between the 9th and 17th of June, eighty-one cases had occurred in the castle while the village of Ennis, which was separated from it only by a bridge, did not present a single case. Dr. Williams, the regimental surgeon, proposed the evacuation of the island, as he would have suggested, to use his own words, 'the quitting a house that was on fire.' Accordingly on the 17th the regiment marched out of the castle and encamped on the highest and driest piece of ground in the neighbourhood. From that day the disease began to decrease and in three or four days more, disappeared entirely.[a] It has been asked in

[a] Lancet No. 470.

the outset of these remarks what can have been the reasons why the visitation of Manchester, considering the greatness, the denseness, and the pauperism of the population, has been so mild? The absence of marsh, either open or concealed, is in all probability one principal cause of this comparative leniency. It will be seen in the perspicuous topographical description of the town by Dr. Lyon[a] that there is but one piece of ground below the level of the Irwell, in the angle where the Medlock opens into that river, and that is very thinly inhabited. Ague is accordingly utterly unknown here and remittent fevers are exceedingly rare in comparison with those of a continued or typhoid character. Marsh is indeed seldom present alone within the circuit, or in the immediate suburbs of any large town: the other sources of malaria from excrementitious and putrescent animal matter being commonly combined with it in a greater or less degree. In Warrington where, in proportion to the population, and to the numbers affected, the disease was more violent than in Manchester, its violence appears chiefly attributable to the pernicious influence of a locality that had once been a swamp, rendered still more deleterious by the large sewers of the town all of which except one, cross it on their way to the river.[b] The disease located itself principally

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[a] North of Eng. Med. and Sur. Journal.

[b] See plate fig. 5.

in Lower Bank-street, with its neighbourhood, and Mersey-street, that district being alluvial, and Mersey-street having from the depression of its level till within a very few years, gone by the name of *under the bongs*, a corruption of banks. "Lower Bank-street has filthy sewers on its northern, eastern and western sides, and the river on the southern, so that this quarter may not inaptly be called sewer island."* In the Salford epidemic, that situation in which the disease prevailed perhaps more extensively than in any other, considering the relative extent and small population of the neighbourhood, comprised some scattered rows of houses between Windsor Bridge, and Cross Lane. These houses, not closely built, are freely exposed to the air, but the surrounding ground is moist and marshy, and there are several pools of stagnant water containing in abundance decayed vegetable and animal matter. The other localities most severely visited were not free from the suspicion of malaria. Thus Oldfield Road is parallel to a branch of the Bolton canal, and there is some reason for believing that the district between the New Bailey and Greengate, Salford, (the quarter which the epidemic overran) from its depressed level in relation to the flood-line of the adjacent river, has been anciently subject to inundations which have left behind them a malarious

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* Extract from Mr. Glazebrook's letter to the author.

quality of soil, that neither time nor the buildings which now cover it, have had the power of effacing.

The manufacturing districts have presented some other instances of the power of this kind of malaria in the generation of the efficient cause of cholera. While, as I have before said, in the populous town of Bury only two insulated cases occurred, both fatal, the disease broke out with considerable violence in the small hamlet of Hinds.[a] This hamlet consists of a cotton mill, and about thirty cottages, situated on the banks of the Irwell, between the river and the Bolton and Bury canal. The first cases, uncommunicated, occurred in the cottages marked in the plan A B and C D, on the brink of a sluice or water course (derived from the Irwell) where this returns the water to the mill: the stream therefore is not stagnant. But just before the eruption of the disease, during Whitsuntide, this sluice had been cleansed and the mud and refuse thrown out had been allowed to remain on the bank exposed to the action of the sun: the same process had taken place in the adjoining canal. The cholera confined itself entirely to this locality in Hinds, where there were thirty-two cases and seven deaths. The cottages it should be added are wretchedly built, the bed rooms having windows without slides and no chimneys in them,—four or five or more persons sleeping in one bed,—and the space for

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[a] See plate fig. 4.

this so small, that it was almost impossible to get at the patient without mounting on the bed for that purpose.[a] In the densely peopled town of Bolton, where the cases did not exceed fifty-one half of which died—the three first cases arose spontaneously "in two detached houses standing in a sheltered valley through which ran a sluggish dirty stream and a small mill-race; and the next cases, equally uncommunicated, within the town, which did not occur till exactly a month after (on the 25th of Aug.) ranged themselves, as well as all that followed, along that part of the town which lies between the main street and the course of a stream that traverses the town parallel to this street. The infected closes and entries lay on the declivity of the stream, and the sewers which pass through them, from many other parts of the town were many of them in a loaded and offensive state."[b]

Extending our view so as to take in along with the three hundred cases the entire course of the Manchester epidemic, the number of cases in any given street or locality was by no means regulated by its vicinity to either of the canals or their branches, or to the three rivers, which form a sort of frontier-line to the several sides of the town. There was indeed a sprinkling of cases, along all the Manchester border of the Irk and the Irwell (which

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[a] I am indebted to Mr. Goodlad for this notice of the cholera at Hinds.

[b] Letter to the author from Dr. Black.

is in general far more elevated than the Salford bank,) but no burst or great cluster of the disease except in Allen's court of which one reason might be that the houses on the Irk stand commonly as high above the river, as did the back row of houses in that court which entirely escaped. However Gaythorn-street, Hewitt-street, East-street, Rainsford-street, and Mount-street, the first parallel to the Rochdale canal and the others near one of its *culs de sac* were considerable sufferers. In the same way the cases did not occur, on the whole, in any unusual frequency on the banks of the Medlock, though these in one or two of the lowest hollows (as Little Ireland and Hewitt-street, lying between the canal and the river) were marked by a pretty large assemblage of attacks. The disease raged, if I may employ this strong word, chiefly in Angel Meadow and its environs, Deansgate and its lateral streets, Bank-top with its lateral streets, and Portland-street, the old haunt of typhus, with its branches ; vicinities all of them at some distance both from the canals and rivers, but where most of the other secondary causes were at work in full and energetic combination.

It is exceedingly difficult to estimate separately the degree of unhealthiness that may arise from the presence of collections of mud and water in the hollows and ruts of unpaved, or ill paved streets, and still more the effects they may have in evolving the specific malaria of cholera, because they are almost always found in union with many other causes

of insalubrity. Where, however, they exist alone, they have not appeared, as far as any inference can be drawn from the Manchester epidemic, to be very deleterious. In August, when the disease suddenly rose to its acme, the dried surface of the streets was washed by heavy falls of rain, for it will be seen by Dr. Dalton's meteorological table that while the heat was excessive, more rain fell here in that month than in any other month in the year—a state of weather calculated above all others to effect the disengagement of miasmatic matter. In order to see whether the action of moisture during this high temperature on the desiccated mud of the streets seemed to have been productive of any bad consequences, I have compared the reports (one hundred and seven in number) of the inspectors of the Local Boards made in the spring of the year, in which the state of the streets is described at that time, with the number of cases in each street throughout the epidemic, according to the registry of the Board of Health. From this comparison I find it cannot be inferred that, *cæteris paribus*, the unpaved or ill paved streets, notwithstanding all their filth and mire were visited more severely than the others. The pavement for example of Old Blakely-street and Hanover-street, with Back Hanover-street, in each of which seventeen cases occurred, is described in the report to be in a tolerably good state both as to repairs and cleanliness, as well as Angel-street, where there were twenty-three

cases, while the streets of Newtown, where the ground has not even been levelled by the spade presented no instance of nearly so great a number of attacks. In Salford, the populous streets which run from Broughton-road to the river were scarcely visited, although most of them are unpaved. In Chorlton-upon-Medlock, streets full of respectable dwelling-houses which are without pavement and almost impassable after rain, continued perfectly exempt from the disease. From the same comparison it does not appear that the vicinity of pools of water in clay excavations, where there was otherwise no swamp or putrescent matter, exercised any influence in the development of the efficient cause.

If that branch of the generating cause which I have been considering has had but little share in the production of the Manchester disease, this remark cannot be applied to the second division of those causes—the effluvia of excrementitious matmatter. These seem to have had a very large share in propagating and directing the course of the epidemic, and are so far more important than the former, that while those may be and often are absent, these must of necessity exist in all large and populous towns. Their reality as generating causes of the choleric poison rests upon facts as numerous and as well authenticated as that of marsh exhalations. I might content myself with calling to the reader's recollection the instance of the Clapham cess-pool, or of the Madras Barracks, or of that men-

tioned by Mr. Jameson in the Bengal Report, or remind him of the cholera in the Mary-le-bone Infirmary, or its return to the Cold Bath Fields prison, where it broke out a second time on that side the prison where a sewer had been accidentally obstructed, or refer him to the localities in Bolton and Warrington. The following occurrence, however, which took place during the Liverpool epidemic, and which I have derived from the best authority, is too remarkable not to be recorded. One morning a mate and one or two men who had gone to bed the preceding evening in good health in a vessel lying in one of the Liverpool docks, were found suffering from cholera. The men were immediately removed to a hospital and the vessel ordered into the river, when another vessel with a healthy crew took its situation in the dock: the next morning all hands on board the second vessel fell sick of the cholera. Upon examining the dock in this part, a large sewer was found to empty itself immediately under the spot where these vessels had been placed. In the Tables the column of localities contains the most abundant and decisive evidence of the generation of choleric malaria from similar causes, and the comparison between the state of certain streets and localities, as reported by the District Boards, before the appearance of the disease with those in which it most prevailed after its arrival, if it fail to realize the expectation that had been formed with respect to the probable operation of some other of the

secondary causes, amply confirms the power and activity of this, and shews that the results which were observed in the first part of the epidemic were visible through its whole course. A comparison of the plan of Allen's Court with the description already given, will make that pestilential locality sufficiently known. In the drawing of the court where the Falkners lived, a darker shade distinguishes the houses attacked, which hung, as I have said, over the exhalations of a spacious open cesspool, while all the other houses round the court escaped. During the subsequent progress of the epidemic no other person was attacked either in the court or near it. In Back Hart-street, of which an idea may be formed from the figure No. 3, the excrementitious effluvia were accumulated chiefly towards the centre of the street, in a circle in which besides the Dunns, and Mc. Donalds, &c., Bentley's family and Whitehead were included, and the mischief of those effluvia was augmented by an obstructed sewer which runs below the street. In addition to the design of conveying a better notion of this particular locality, one motive for the insertion of this plan has been to show the relative position of the conveniences in the front houses and back streets of the most populous parts of the town, a position most pernicious to the tenants of both. Behind each house of the front street, in a yard of a very few feet square, is a convenience with an open cesspool placed commonly close under the window of

the back room, (the room that is chiefly inhabited) and every house having an uncovered cess-pool in the same situation, the back streets present one long and loathsome line of these wells of pestiferous effluvia. To these correspond the fronts of the houses of the back streets, separated from them only by a very narrow alley, and still further poisoned by other abominations[a] of the same kind, built in between every eight or ten of these hindermost houses. The streets which suffered most from cholera, Lombard-street for example where there were eighteen cases, have many of them presented very perfect specimens of this most vitious construction. In Beckett's court, in close proximity to the houses of Mather, Mc. Allum and Boyd, and in Pilling's Court was a state of things not less noxious. The Report of the Inspectors of Clock-face Entry, Oldham Road, too revolting to be copied into these pages, had prepared us for the havoc which the disease made in that entry where there were seventeen cases. The same may be said of Back Parliament-street, and Potts-street, and Back Potts-street. The accumulation of this generating

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[a] The old writers gave to such places the appropriate and emphatic name of *evils*.

> "Having waste ground enough
> Shall we desire to raze the sanctuary,
> And pitch our evils there?"
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> *Measure for Measure*, *A.* 11, *s.* 11.

cause of cholera in pauper lodging houses, in large families of poor children, or in close and confined streets and courts, in which the refuse on the surface contains a large admixture of excrementitious matter, contributes without doubt in no small degree to the quantity of the choleric miasms evolved in those places. The court where the Nobles were seized, answers exactly to this description. The burst of the disease in the lodging house No. 12, Blakeley-street was imputed by the most observant of the inmates to the intolerable effluvia of a loaded convenience close to the door of the room where the victuals were cooked, and where a crowd of lodgers were constantly assembled. In Back Irk-street it was remarkable that the only houses visited by the disease had a singular position relative to the main sewer which there runs above ground, We have seen that the first house attacked just overhangs the spot where the contents of the sewer gush through a large orifice, and from having been subterranean become superficial: the two other houses, in which eight cases occurred, are situated where the sewer near its termination gets from the middle to the side of the street and flows close past the threshold of these houses. In the same way the house in which the Cavanaghs died—the first case in Little Ireland, has its door almost washed by an abominable sewer which, having become closed higher up the street, flows in that part above ground. In Tasle-street and Tasle Alley,

thoroughfares so well known, a numerous group of cases on both sides of the street correspond exactly with a grate through which, in consequence of an obstruction below, the contents of the main sewer escape. Thus likewise Palfreyman the first case of the epidemic; and the only one that happened in Somerset-street, lived just opposite a large dunghill; and the house of Kirchen, the only person that suffered in lower James-street, looked directly over a still larger dunghill in Pickford's yard. A glance at the information contained under this head in the Tables will show how easily, but for the repugnance which the subject naturally excites, I might multiply examples of the same influence. If the wide diffusion and the energy of this generating cause be duly appreciated, it will be seen that all the advantages of the most salubrious site as far as it results from dryness, elevation, and the qualities of the soil may be nullified by the bad construction of streets and courts, of houses or cottages, and by the disgusting habits of the inhabitants; and may explain what otherwise would be regarded as anomalies in the conduct of the epidemic. It will be seen too how, in crowded and ill ventilated courts, besides the general depressing effects arising from stagnant air, the choleric miasm is both penned up, and applied to the body precisely by the agency of the same causes which elicit and develope it.

It has been somewhere said that the Liverpool visitation was more severe than that of Manchester,

because its sewers were in a worse condition. The truth is that in the greater part of Manchester there are no sewers at all, and that where they do exist they are so small and badly constructed that instead of contributing to the purification of the town, they become themselves nuisances of the worst description. Recently two or three have been formed or enlarged on a scale of dimensions somewhat more adequate to the functions which they have to fulfil, but to make the *subterranean* of this vast town what it ought to be, and to excavate under its whole surface a complete order of primary and secondary drains, would require an expenditure of not less than three hundred thousand pounds. The labours of the night-man and scavenger do something towards the abatement of this evil; but it is necessary that those of the latter should be placed under better regulations, while in the formation of new streets it ought to be imperatively required that the *subterranean* and pavement of the street be constructed and rendered complete before the houses are built.

Two more remarks are suggested by the consideration of the generating causes of cholera. First, it is to his complete protection from their influence that the rich man is indebted for his immunity from cholera quite as much if not far more, than to any remarkable freedom from the agency of the predisposing causes, which his wealth confers. The contrast between the localities which the rich and poor

inhabit, exhibits perhaps the most striking example of the substantial advantages, as far as health is concerned, which affluence can bestow, by enabling its possessor so to construct and fix his residence as to place himself and his family beyond the reach of every ordinary source of malaria. In ancient times the importance of such a choice was not understood, and in towns accordingly the better classes who inhabited dwellings almost as small, ill ventilated, and badly placed, as the poor of our own days, fell victims in far more equal numbers to the epidemics that then preyed upon the land. Even during the progress of cholera in some cities where the local partition between the two great classes of society has been less marked, the disease has attacked both rich and poor in their promiscuous habitations with almost indiscriminate severity, as in Moscow, where one hundred and twenty-four nobles died of the disease.

2.—It may be thought visionary perhaps, but I am disposed to ascribe a large share of the exemption from cholera, which the working classes of this town enjoyed during the epidemic, (an exemption which has been happily extended to the manufacturing districts generally) to the cotton factories in which they work. It was impossible, at least in this town, not to be struck with the fact, that of the whole number of the Manchester cases very few indeed were employed in factories at all, and that of these a pretty large proportion were at the

time of their seizure out of work or detained at home from some accidental cause. Out of the two hundred Tabular cases only twenty three worked in factories, and of these twelve were out of work or accidentally remaining at home. The answers that I have received from my medical friends at Warrington, Stockport, Oldham, Bolton, and Hinds, to enquiries directed to ascertain this point, are uniformly of the same tenor—namely that the factory people in actual employment have scarcely ever suffered. Of Stockport for example, Mr. Flint says "it was observable during the prevalence of the pestilence here that the working inmates of our mills enjoyed a remarkable immunity from attack, an immunity which denotes the general comfort and cleanliness of these establishments. The patients, chiefly females, were nearly all employed about private dwellings." Of the fifteen hundred and twenty work people in the largest cotton establishment in Manchester (that of Messrs. Birley and Kirk) only four were attacked. Not a single person was attacked in the cotton-mill at Hinds, though the disease raged in the hamlet. In some places the singularity of their escape struck the work-people themselves. Mr. Glazebrook writes to me from Warrington that "persons employed in the cotton trade at home, viz.: 'reelers' &c. suffered, but we had few, if any cases, from the cotton mills. 'I have been thinking master,' said an intelligent spinner to Mr. Sowden, (one of the

proprietors of a mill situated on the eastern bank of the Mersey,)—'that the cholera is occasioned by insects so small that we cannot see them, and that they cannot live in factories on account of the heat and quantity of oil used,—and I was talking about it last night with some friends of mine, all of whom agreed with me.' 'It may be so' replied Mr. Sowden, —'you are all safe at work; tell the rest so.' The man did as he was directed, and the consequence was that the work-people despatched their meals as quickly as possible, in order to get back into the mill. Not one suffered, though the situation of the mill is close to the river." I need not say that the spinner's theory is not cited here for the purpose of adopting it, but only with the view of shewing the impression which the fact of exemption had made upon the minds of the people themselves. There is of course a difference in the mills, and the remark I am about to make applies with most propriety to the larger and more modern, but the cause of that exemption is in all probability to be found in the vast superiority of the factories over their own wretched dwelling-houses, in the comparative spaciousness,[a] light, airiness, uniformity of temperature, and ventilation of the rooms, and in the distance at which the work people, especially those employed

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[a] In the mill of Messrs. Birley and Kirk, for each person in the spinners' room there are thirty-two square yards, and fourteen for each person in the carding room.

in the upper rooms are placed, during the day, from the sources of malaria, which infect the confined courts and the narrow streets, without naming the crowded and filthy beds, in which they pass their nights. Whoever should dispute the great extent of this difference of comfort and wholesomeness between the days and nights of the cotton factory population, will soon resolve his doubts by following the work-people of Messrs. Birley and Kirk, from their large and commodious apartments in the Chorlton mills, to the low, dark, close and squalid cottages of Little Ireland, where so many of them are huddled together at night. These indeed are lazar-houses, while in comparison (I speak of course without reference either to the hours of labour or the age of the labourers) it would be scarcely extravagant to represent the mills as asylums of health.—The absence then of any large tracts of ground, either covered or exposed, where the miasm from vegetable putrefaction is engendered, and the removal of the working classes for so considerable a portion of their time from their close, dirty and malarious habitations, into edifices where in comparison there is abundant space, and air and cleanliness are the two circumstances which I conceive have proved most advantageous to this town and district, and to which is principally to be ascribed the mildness of our epidemic. Thus the prediction of the contagionists has been reversed, and cotton mills instead of diffusing the disease by

the congregation of large numbers in one place, and the freedom of contact and intercourse arising from it, have checked its prevalence by rescuing the people employed in them from the long continued action of those generating causes, which exist in such pernicious profusion both around and within their miserable homes.[b]

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[b] If it be thought that the abridgment of labour contemplated by Mr. Sadler's bill will banish from the mills the pale faces, and the attenuated and dwarfish forms which are occasionally to be seen there, the advocates of that measure are doomed to certain disappointment. As long as the too youthful mother continues to return to her work before she has recovered from the languor of parturition,—as long as she continues to desert her infant, and leave it all day in the hands of some feeble and decrepid hireling,—as long as the father wastes at the gin-shop what ought, in the absence of maternal care, to feed and clothe it,—so long from a race of sickly and ricketty infants will spring up a generation of delicate and ill-shaped children, to become men and women without either the vigour or forms of maturity. The most crying physical evils that debase the cotton-factory population, intemperance, low sensuality, premature marriages, and the mother's shameful and unnatural abandonment of her offspring, whose condition is worse than that of a foundling, are evils which legislation cannot reach, and which if they are ever remedied, must be remedied by the virtuous efforts of the people themselves, a truth that cannot be too strongly impressed upon their minds. If they will not 'administer to themselves' the remedy, in spite of the most salutary laws in their behalf, their degeneracy must go on increasing from age to age.

Œtas parentum, pejor avis, tulit
Hos nequiores, mox daturos
Progeniem vitiosiorem.

Though it is notorious that cholera can rage where the thermometer is below the freezing point, it is not less true on that occount that a high atmospheric temperature, which is favourable to the disengagement of all the morbific miasms, has generally accompanied the most widely diffused attacks of the malignant, as well as of the English cholera. The lassitude which heat produces and the desire for acescent foods and drinks which it creates, multiply undoubtedly the predisposing and exciting causes, yet that the diffusion is owing not to these exclusively but to the evolution of the *cause* of the disease, is evident from the fact that it is greatest when excessive heat alternates with heavy rain, a state of weather which while it lessens languor and thirst, assists more than any other state the generating causes in the production of the poison. From the following Tables it will be seen that the Manchester epidemic which arose a little earlier than our common cholera, sprang to its climax by a sudden and very remarkable leap in the month of August, in which according to Dr. Dalton's journal, (an extract from which I owe to his kindness) more rain fell than in any month during the whole year.

Number of cases in each month.

1832.	May	4		October	172
	June	37		November	33
	July	108		December	2
	August	650	1833.	January	2
	September	261			

METEOROLOGICAL TABLE. 1832.

	MEAN OF BAROMETER.	MEAN OF THERMOMETER.	RAIN IN INCHES.
JAN..	29.94	39.1	1.245
FEB..	33.04	39.8	0.800
MAR.	29.87	44.5	2.310
APR..	30.02	49.	2.275
MAY.	29.97	53.6	2.990
JUNE.	29.88	61.5	4.085
JULY.	30.11	61.7	2.300
AUG..	29.89	61.2	5.555
SEP..	30.10	59.5	1.025
OCT..	30.01	53.2	4.025
NOV.	29.83	43.9	5.180
DEC..	29.94	42.9	4.852
MEAN.	29.97	50.82	36.642

ON THE PREDISPOSING CAUSES.—While it is desirable to keep these distinct from the generating causes, though they commonly coexist, it is not less necessary to subdivide them into natural and acquired. By natural predisposition is meant such a congenital organization of the alimentary canal, as gives it more irritability and more sensibility than the same part usually possesses. Such an organization shews itself early by a tendency to diarrhœa upon trivial irritations of the canal, and the persons distinguished by it are subject, all through life, to bowel complaints from very inadequate causes.

The effect of this kind of susceptibility in predisposing to cholera is strikingly shown by the Tables in which a separate column has been appropriated to it: here it will be seen that out of the one hundred and twenty-one among the cases in which this predisposition was ascertained, seventy-two are characterised by a greater or less degree of congenital susceptibility. It exercises, I am persuaded, a stronger influence in determining an attack of cholera than has been generally imagined, and is perhaps on the whole a more powerful secondary cause than acquired predisposition. The mucous membrane of the stomach and intestines, resembles in fact, where this condition exists, a soil whose native properties are in a high degree favourable to the germination of some particular plant. Wherever any persons in the better class of society have been seized, this species of susceptibility has been commonly present. It will be likewise observed from the Tables that several of the sufferers had been attacked at some antecedent period of their life by a severe form of the English disease. From as much as we know of the nature of the peculiarity of organization which leads to these attacks it may be conjectured, that a contrary peculiarity contributes towards the singular insusceptibility which belongs to some individuals, and of which several striking instances occurred in the course of our epidemic. Thus, to select two only,—when Tierney sank into collapse, he would have his wife come

and lie on the same bed, and notwithstanding she remained in this position for three hours with his black and icy arms round her neck till he died, she took no harm. Anne Sweetman after having nursed Alice Humphreys and washed her dead body slept in the same bed with the corpse and remained perfectly well.

Acquired Predisposition includes whatever impairs the general health, especially by injuring the digestive organs, previous disease, habitual intemperance, the enervation of low and profligate habits, old age, uterogestation, excessive labour, imperfect nutrition, with the other physical evils attendant upon poverty. It appears, however, from the column where acquired predisposition is indicated, and the fact may be considered a little remarkable, that in about one half the whole number of the tabular cases the previous general health is marked good or even excellent, and that the cases are very few indeed in which the predisposition depended on the presence of actual disease of whatever kind. In a great many cases, intemperance and the possession of good general health are said to have co-existed, and here some little deduction will be made from the accuracy of the statement, but still there are undoubtedly very many among the working poor who are occasionally intemperate, whose constitutions are so strong or so early habituated to the stimulus of ardent spirits, that they are entirely unconscious of receiving any injury from the excesses

in which they indulge. Of the reality, however, of such injury, especially to the digestive organs, the liability of this class of persons to cholera is itself a sufficient proof, because in a considerable proportion of them, the sole, unassisted, predisposing cause was intemperance. Of this we had several examples immediately after the festivities of the Reform celebration day. The Tables then show on the whole that predisposition is but rarely conferred by previous disease alone, and confirm the observation which Dr. Laurie has derived from the inspection of the bodies of those who die of cholera, that very few of them have exhibited any traces of morbid alterations of structure, the result of serious organic maladies in activity at the time of their seizure. The same thing has been observed in the few post-mortem examinations made in this town. In the Chorlton-upon-Medlock Cholera Hospital we had ten post-mortem examinations. In one the gall-bladder was found full of stones, in three the mesenteric glands were enlarged, and the *tubuli uriniferi* of the kidney in another contained a little pus. Nor is the force of Dr. Laurie's observation destroyed by the apparently contradictory statement of Dr. Craigie.[a] That the alterations of structure in the cases recorded by him were departures from the perfect health of the organs is true; but that they were all 'signal' changes can hardly be admitted. On the contrary

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[a] Ed. Med. and Surg. Journal, cxiv, p. 45.

many of them were departures so slight and inconsiderable that they would have probably been overlooked by a pathologist less accustomed to the nice distinctions of morbid anatomy than Dr. Craigie. If every individual is to be set down as susceptible of cholera, the integrity of whose organs is not absolutely and universally unimpaired, there will be no limits to predisposition from this cause, especially if the proof of the deviation be confined to the appearance after death, in ignorance of the state of the associated function during life. The conclusion which this eminent physician has drawn from the morbid appearances, namely, that they who have died of cholera could not have survived more than ten years had they escaped it, and that the deaths of the next ten years having been only a little anticipated, the average mortality will not be in the long run disturbed—this conclusion appears scarcely to be warranted by the facts.

In many cases it will be seen that old age, or the imperfect nutrition connected with extreme indigence, though in neither case accompanied by any positive deviation from a healthy state of the body, seemed enough to constitute the predisposition. While the chances of taking the disease from old age merely are considerable, the chances that a decaying frame has of contending successfully with it, are small indeed. The following Table, which includes all the cases from the register of the Board of Health where the age has been recorded, shows in a

striking manner the influence which the period of life exercises, both on susceptibility and the capacity of resistance. It will be seen from this that the susceptibility for the disease is greatest between the years of twenty-five and thirty-five, and that the chances of recovery from an attack which are pretty nearly equal with those of death, between one and fifteen years, and between thirty-five and forty-five, are somewhat greater between twenty-five and thirty-five, and two to one between the ages of fifteen and twenty-five ; while on the contrary the chances of death go on increasing from forty-five to eighty, in a rapidly advancing ratio, being two to one between forty-five and fifty-five, and four to one between sixty-five and eighty.

AGES.	TOTAL.	DEATHS.	RECOVERIES.
1 to 15	199	101	98
15 to 25	153	53	100
25 to 35	264	98	166
35 to 45	192	93	99
45 to 55	197	116	81
55 to 65	120	85	35
65 to 80	85	68	17

With respect to the relative liability and capacity of resistance which are connected with sex, the number of males and females attacked was as follows :—Males, 636 : Females, 691.

The proportion of deaths in each sex to the whole number seized was nearly equal. If more females were attacked than males it cannot be concluded from this circumstance alone, that their suscepti-

bility for the disease is greater than that of the opposite sex. The difference may depend on a greater number of them having been exposed to the causes of the disease, the malarious cause especially, by remaining at home. In Sunderland, the number of female victims to the disease at the middle period of life was double that of males, and the practitioners there for a long time puzzled themselves to divine what could be the cause, until it was at length remembered that the *men* were at sea.

Of the Exciting Causes.—It commonly happens that both the generating and the predisposing causes, though long present, either single or combined, prove incapable of giving origin to an attack of the disease, without the co-operation of this class of secondary causes, which though closely connected with the preceding, as these are with each other, are still studiously to be kept apart from them. The exciting causes unlike the predisposing seem (if I may repeat the figure) to have more to do with the seed than the soil: they operate by calling into activity the dormant germ of the poison. I may illustrate their effect by an example taken from another disease. Dr. Marsh, of Dublin, relates the case of a boy who had been bitten by a dog, (which afterwards died rabid,) so slightly as to leave no impression on his mind. He remained perfectly well till four weeks after, when he was thrown by his companions into a ditch, and went home wet, chilled, and complaining he felt ill. On

the evening of the same day symptoms of hydrophobia manifested themselves, and he died. Now in this case no one can say, that but for the misfortune which befel him, the disease would have been developed at all. The *virus* which had remained innocuous in the system for a month might have continued so for ever, had it not been called into activity by this, or some similar accidental excitement, and there is perhaps nothing more curious, both in miasmatic and contagious diseases either, than this latency of the morbific germ, or the operation of the causes that rouse it into life. The most ordinary exciting causes of common cholera are rightly considered to be errors of diet; the same is true of the malignant cholera. A reference to the Tables will show, that in almost eight cases out of ten something had been taken as food or beverage calculated to derange the digestive organs, either by its quality or quantity, and it would appear that from the preternatural sensibility of these organs as the heat of summer becomes more intense, even the diet habitually taken, and which generally agreed with the alimentary passages, was liable then to act upon them as an irritant. In the majority of instances the offending matter was either the low priced ale of the beer shops, adulterated as it is by aperient and narcotic drugs, semi-putrescent buttermilk, fœtid pork and fish, or rotten potatoes: in one instance a quantity of the latter which were vomited during the incipient stage of

the disease continued to emit, for many days, a phosphorescent light, a circumstance that appeared most mysterious and alarming to the neighbourhood where it happened. To fast as well as to overload the stomach was equally pernicious, but one of the most certain of all the exciting causes was what but too frequently happened, a fit of drunkenness under the influences of sorrow, alarm, or both. Alarm alone had of itself the power of exciting not only hysterical sensations, imitative of the true disease, but the true disease itself, of which I may mention an example in Margaret Harrison. Next in fact to errors of diet the depressing passions of the mind were perhaps the most frequent means of developing the choleric germ; these emotions had here as every where a wide spread influence, which became particularly evident where several in a family were seized. The mutual re-action of grief and fatigue on each other was the reason why near relations in attendance on the sick seemed more liable to an attack of the disease, than indifferent persons who performed the same office. From the remarkable case however of the Swan-street nurses, related in a former part of these remarks, a case which proves to demonstration the vast importance of this and the preceding class of subordinate causes, it may be inferred that the exhaustion and anxiety inseparable from nursing are divested of a great part of their predisposing and exciting power, when, instead of attempting to re-

lieve them by an artificial stimulus, the strength is supported by a regular and tonic diet, with sufficient sleep and perfect sobriety. Nor does it matter in a prophylactic point of view whether the immunity of the future nurses was secured by the power thus conferred of resisting the entrance of the poisonous germ into the circulation, or by the circumstance of nothing being applied to the germ *after* its entrance, capable of disturbing its latent and harmless repose.

On the best general arrangements for meeting the disease.—It is not pretended that the foregoing account of the causes of cholera explains in a complete manner either the origin, progress, or decline of the epidemic. Besides the fact that the disease has committed sometimes ravages the most terrible in places from which, if we are to believe the reports transmitted to us, the generating causes have been almost entirely absent as Bilston, and Orenburgh, it is plain that they existed in Manchester in all their force before the outbreak of the disease without producing it, and still continue to exist. Nor is this less true of the predisposing and exciting causes: they may prevail without giving rise to cholera, and cholera can spring up without any aid from them. The decline of epidemic diseases is, if possible, still more inexplicable than their rise. They decline, it is said, because all those who were susceptible of the disease have had it. The fire is extinguished for want of mate-

rials to feed upon. Nothing can be further from the truth. If the causes of predisposition be such as universal observation proves them to be, then vast numbers of persons escape for whose immunity no reason can be given, and the conflagration in the height of its fury and surrounded by fuel on every side abruptly stops, and goes out of its own accord. That the reason assigned for the disappearance of the epidemic is not the true reason is proved by the not unfrequent re-kindlings of the disease, as in Glasgow, when its return has been sometimes more destructive than its first invasion. The mystery is common to all the epidemics and is as incapable of solution in hooping-cough as in cholera. When the disease having reached its acme suddenly declines we see the impotence of the secondary causes, whether they be malarious, bodily or mental: these are all co-operating more powerfully than ever to produce a further extension of the disease, but the efficient cause, why we know not any more than why it arose at first—ceasing to be evolved, the epidemic droops and dies.

Considering that the cholera in this town began, reached its climax and declined much about the period which is observed by the common cholera, we may encourage the hope, in spite of the continued activity of some of the secondary causes, that there is nothing present here likely at any future period to give an extraordinary degree of intensity or diffusion to the efficient cause of the

disease, should it return—while its return is in the highest degree improbable, when we reflect that although there have been re-kindlings of the pestilence, as in Berlin and Glasgow, no European place has been revisited after its perfect and complete cessation except Astrachan, the site of which on a swampy delta, resembling the jungles and morasses which were the 'incunabula' of the disease in India, is peculiarly fitted to become one of the *settlements* of cholera. Although, however, a second visitation of the epidemic is happily very improbable, it is by no means an impossible event, and I shall on that account express with the freedom which conviction claims, the opinion I have formed on the most advantageous manner of encountering it.

The Board of Health, who discharged their duties with a zeal and vigilance which entitled them to the gratitude of their fellow-townsmen, considered themselves bound to carry into execution the spirit and intentions of the Cholera Act. On the propriety and necessity of a great number of the measures they adopted in conformity with this act, such as the removal of nuisances, for which however a more summary power was wanted, ventilation, scavenging, whitewashing, the early interment of the dead, to which may be added the establishment of a Reception-house, the erection of a disinfecting apparatus according to Dr. Henry's plan, the antimalarious use of the chloride of lime, and especially the

various charitable plans for feeding, clothing and improving the comforts of the poor—on all these no difference of opinion could be entertained. But the provisions of the act required a system of publicity which was bad, and a hospital system which was bad also. Without any adequate counterbalance of benefit, these systems committed the capital offence of setting and keeping at work, through a whole community, that agitation and fear which, as we have seen, render the human frame most capable of being acted on by the cause of cholera. The perpetual appearance of fresh placards headed by this frightful word—the daily parade of reports—the procession of the sling exciting and wounding the curiosity of the passengers—the rattling of the cholera van through the streets—the dead-cart followed by a mourner or two at an awful distance, moving slowly towards a remote burying-ground branded with the double stigma of poverty and infection—all this ostentation of pestilence was most pernicious. Nor was the hospital system, though organized with the most benevolent intentions, productive of less mischief. The poor of this town never overcame their horror of the cholera hospitals, and even when they voluntarily went into them, they did so, as far as my observation went, always full of anxiety and alarm which were suppressed from the generous desire of not infecting their families by remaining at home. For the most part, however, they were forced into

the hospitals, either by the harsh resolution to which the Board, in the latter part of the epidemic, had recourse, of leaving to their fate after the first prescription, such as refused to go there or by the fears of their neighbours, who gave secret information of any fresh seizures to the resident medical officers of the hospitals (the informers always imploring that their names might not be disclosed,) and the cholera-van was despatched to the place indicated. Here the scene which followed the announcement of the van was often most distressing: while the neighbours insisted on removal, the relations would refuse to allow it, and support their refusal by a denial of the nature of the disease, the poor victim himself suffering during the noisy conflict an aggravation of that despair, which is one of the most constant and most fatal features of the disease. Compelled at last to submit, the patient was placed in the hearse-like box of the cholera van in one of two states—either in the more favourable state preceding collapse, or in the stage of collapse itself. In the latter case, if the removal were harmless, no good could be expected from it; in the former, the terror inspired by even a brief incarceration in such a place, (to say nothing of the vibrating motion of the carriage, of the seminudity in which the carelessness of the assistants often left the patient, or of the filthiness of the blankets in which he was wrapped defiled by successive occupants)—that terror was found to work, as might be anticipated a change for the worse: the pulse fell—

the cold sweats increased—the powers of life sank, and the patient was pulled out of the van with his chances of recovery sensibly diminished. This is not a picture of the imagination: on examining a patient before and after removal, I have several times observed the change of which I speak.—The hospitals themselves furnished no such advantages as could be set against these evils. Experience has shewn that spirit baths, tin mattrasses filled with hot water, hot water baths, and the more operose remedies for the preparation of which the accommodations of a hospital were necessary, possess no superiority over the other simpler means for restoring the warmth and the circulation.—If it be said that hospitals are necessary to arrest by the removal of the sick, the spread of the disease in families, the ready answer is that the disease has not spread where there were no hospitals. I might mention more than one example of this in the manufacturing districts, but I prefer to adduce that of Kendal, as it gives me an opportunity of recommending to the notice of the reader the excellent account of the epidemic of that town by Dr. Proudfoot. In Kendal, the population of which in 1831 was 11,301, 171 cases, (the total number,) happened in 138 houses, 114 houses having only one case each, although they had no hospital, but were all treated in their 'miserable homes;'[a] whereas, as we have seen, in Manchester, with our two hospitals out of

[a] Ed. Med. and Surg. Journal, cxiv. p. 95.

the 200 first cases only 107 houses had one case each, all the rest having more. Thus the disease actually spread less in families without a hospital there, than with two here. Since, however, it is desirable to place as many persons as possible out of the reach of the causes of the disease both local and contagious—weak as the contagion undoubtedly is—wherever a cottage is inconveniently crowded, let as many of the inmates as may be necessary sufficiently to thin the numbers, be sent out of the way for four or five days to a commodious and cheerful Reception-house. This may be done without much expense, for the whole cost of the Reception-house during our epidemic amounted only to £129. The presence of the patient need be no obstacle to the performance of all those offices which will render his cottage as clean and airy as it admits of being made, and where the indigence is great, a small portion of the large sums required for the support of hospitals, will provide for him during an illness, commonly brief as it is violent, at least the temporary use of a comfortable bed. The duties of a nurse will be best fulfilled by a member of his own family. On recovery nothing is more needed, especially for those patients who pass through the debilitating secondary fever than a Convalescent Retreat, where a suitable diet and the tonic power of country air may completely re-establish his strength. For want of such a Retreat, I could point out not a few of those who survived the disease in this town, who are now dragging on

a comfortless and languid existence, incapable of enjoying life or bearing the amount of labour necessary to their maintenance.—Should it be objected that hospitals are necessary for the convenience of medical practitioners, the economy of whose time and whose personal comfort it is right to consult, it may be granted that if their attendance is to be gratuitous, it would be most unreasonable to expect, that in addition to the bad odour into which, when their attendance on cholera becomes known, they fall with their private patients, not seldom accompanied with pecuniary loss, they will pass their days and nights in the dirty and unwholesome courts and alleys where the disease chiefly prevails. Their services on such an emergency as the out-break of an epidemic, are totally different from those which they render as officers of the ordinary medical charities, an appointment to which carries with it the direct reward of honour, and increases the public confidence in their skill. Humanity or a due regard for the sick requires that they should be paid still more than justice. It is idle to conceal the fact that the heat and burden of the epidemic fell in the hospitals on the resident medical officers, the only paid, and therefore the only responsible servants of the board. The staff, as it was the fashion to call the physicians and surgeons who gave their gratuitous attendance, might perform or omit the duties they had imposed upon themselves, according to their will and pleasure. I shall not, I feel persuaded, be suspected of any thing so unbecoming as the censure

of individuals. I speak only of the hospital system, and its almost unavoidable consequences. The district medical officers were equally irresponsible and for the same reason, and one consequence was that while a great number did little or nothing, the labours of the more zealous few were too burdensome to be tolerated. If the patients had been all seen at home, and two guineas (including remedies,) had been paid to the medical practitioners for each of the thirteen hundred and twenty-five patients attacked here, this arrangement would have cost the town less than the two hospitals, although little more than one half the whole number of cases were treated in them, the rest having been seen at home by the district surgeons.[a]

Should then the disease unhappily return to this town let it without any dread of the consequences, for there are no consequences to dread, be treated entirely at home. Let the practitioners who treat it be paid by the Board and strictly responsible to it, their responsibility being enforced by means which it will be very easy to devise. Besides the economy, the justice, and the equal distribution of labour which recommend this plan, the epidemic can thus alone be quietly conducted through the

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[a] The sums of money paid on account of the cholera, amounted to £4,174. 4s. 2d. of which the 685 hospital patients cost £2,740. 4s. 10½d. (deducting a trifling sum for the alterations in the Reception-house) and the 640 home patients cost only £124. 15s. 3½d. Thus the expense of a hospital patient was more than twenty-six times as much as that of a home patient.

town. There will be then no general panic arising from the daily exhibition of all those sights and sounds of pestilence which still haunt the imagination : the poor man's heart will not be afflicted by the prospect for himself or his children of a pest-house or an ignominious grave (for why should a precaution be thought indispensible in cholera which has been safely neglected in typhus fever ?) that unconquerable horror that he has of cholera hospitals which although the result of ignorance and prejudice is worthy of compassion, will be pitied ; —there will be no rioting, no excitement of the mob dangerous to the peace of society. But these are far from being the most important benefits that will flow from the adoption of this plan. The dread of going into hospital increased the mortality by leading to the concealment of the disease till it was desperate, nor could all the efforts of the Board prevent this evil. Upon the system of home treatment, that motive will cease to operate, and advice will be sought while the disease admits of cure. It generally happened that nothing was known to the medical officers of the hospitals concerning the previous history and treatment of the disease ; and this ignorance sometimes led to strange incongruities of practice. These would be avoided ; the management of each case from first to last, remaining in the same hands. But above all, the cases of precursory diarrhœa, in members of the same family, would be known to the practitioner in time to enable him in a vast number of instan-

ces to avert the advance of the disease. Of all human means for circumscribing and controlling it this is the most certain and the most powerful, and if the home were superior to the hospital system in this one respect only, its importance is great enough to counterbalance a host of minor disadvantages. How considerable is the difference in the mortality when the disease comes under medical treatment in its early stages, appears from the following instructive Table, which connects the period of admission with the event of the disease in all the cases received into the Swan-street Hospital. It was drawn up by Mr. Lynch, the able chief resident surgeon to that hospital.

TABLE

SHEWING THE EVENT OF THE SWAN-STREET HOSPITAL CASES ACCORDING TO THE STAGE IN WHICH THEY WERE ADMITTED.

ADMITTED IN THE STAGE OE COLLAPSE,	CURED.	DIED DURING COL-LAPSE.	DIED IN THE CON-SECUTIVE FEVER.	DIED FROM OTHER DISEASE AFTER RECOVERY FROM CHOLERA.
227.....	34	176	17	0
ADMITTED WHILST PASSING RICE WATER EVACUATIONS, 181.....	146	20	13	2
ADMITTED DURING THE PREMONITORY SYMPTOMS, 35.....	31	0	1	3

Treatment of the disease.—It happens not unfrequently in medicine that the pathology and treatment of a disease do not keep pace with each other. Of this, cholera is unhappily an example. We know the nature of this disease, not perfectly indeed, but well; we see clearly what requires to be done, but our art presents us with no means of sufficient power to do it. The poison of cholera, whether it be in the miasmatic or contagious form, seems to produce its primary impression directly on the alimentary canal. The symptoms first in point of time in the severest cases are all referrible to this canal, and however mild the form or degree of the disease, the gastro-enteric irritation is always present. The two most remarkable morbid changes which simultaneously and in the worst cases immediately follow, and are in some inexplicable manner caused by this irritation, are the decomposition of the blood and what has been strongly but truly called the serous hæmorrhage from the mucous membrane of the stomach and intestines. Experiments to determine the extent of the decomposition of the crassamentum require still to be made, but the reasons are evident why cholera blood after a loss of serum of twenty-two per cent, and of one third of its salts, and an increase of albumen from eight and a half to sixteen per cent, is dark, thick and adhesive. If so notable a diminution in the quantity of fibrine as that which Dr. Thompson found, amounting in one experiment to one third, and in another to one tenth only of the fibrine of healthy blood, could be

believed to be accurate after the criticism of Dr. O'Shaugnessey, we should have another reason for the more than marble coldness of the extremities, which is scarcely to be accounted for by the retirement of the blood from the surface and its accumulation in the large central vessels. The experiments of Dumas and Prevost show that a diminution in the fibrine of the blood is always attended by a remarkable diminution in the temperature of the body, while its superabundance, as in the buffy or fibrinous blood of inflammation, is well known to be accompanied by the generation of animal heat. The imperfection of the chemical changes produced on the blood in the lungs may also contribute something to the extraordinary coldness of the body. At the same time a sufficient number of experiments has not yet been performed to confirm the opinion of Dr. Davy, that the volume of expired carbonic acid gas is materially lessened. Its quantity varies in health more than is commonly believed. In the experiments of Allen and Pepys, a healthy middle aged man produced eight per cent. while Dr. Dalton expires only half the dose—four per cent.—and he has related[a] an exceedingly curious case of a young gentleman who lodged in the same house with him and lived chiefly on potatoes and water, whose breath yielded, I think, not more than three per cent, and who was habitually so cold that he slept under fifteen blankets in winter and seven

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[a] Memoirs of the Manchester Lit. and Phil. Society.

in summer. Besides the decomposition of the blood, the serous hæmorrhage into the stomach and bowels with the discharges that relieve them, and the rush of blood from the surface to these organs—associated actions which are directly produced by the violent irritation of the gastro-enteric membrane,—others take place which are the result of a sudden sympathy, as the spasms of the voluntary muscles, the enfeeblement of the heart's action, and the general prostration of the strength. Nor can these symptoms go on without exasperating each other, and giving rise to new mischief. The secretions are suppressed chiefly by the continuance of the sero-albuminous discharges, to which and to the intense pain of the spasms may be ascribed the thirst and burning heat of the stomach, while this suppression leads to other changes, as the circulation of urea in the blood according to the observation of Dr. Christison. Further, by depriving the blood of its fluidity and mobility, while they draw it into the large central vessels for their own supply, they suffocate the action of the heart and impede the circulation through the lungs, until at length the heart paralyzed by the violent pain of the spasms which always exercise on it a sedative influence, and overloaded with decomposed blood ceases to move, and its death is followed by that of the other organs.

The one great indication in the treatment of cholera is to stop the serous hæmorrhage from the bowels, or to assist nature in that spontaneous effort to suppress it which she seldom fails to make. In

my own practice, having no confidence in the various novelties that had been suggested, I adhered for the accomplishment of this end, to a modification of the India method of treatment, and with about the average success, but as the details of this treatment would present nothing new, and would be derived from a comparatively limited observation, I think it may be more useful to communicate some of the general results of that experience which was acquired in the two cholera hospitals of the town. The venous injection was tried in about eight cases, all of which terminated fatally. The saline remedies of Dr. Stevens were not confided in, having been found inefficient in the stage of collapse, and inferior to the ordinary practice in the incipient stage. The cold water plan of Dr. Shute was adopted in two or three instances, without the extraordinary benefit which attended the use of it in his own hands. The only novel practice which was thought to have succeeded was that of administering repeated doses of tartar emetic, with what view I leave Mr. Langford, the chief resident surgeon of the Knott Mill hospital, to explain in his own words. The great care with which he watched the effects of this medicine, the number of cases in which he tried it, and the confidence in its efficacy with which the issue of those cases inspired him, all entitle his letter to the best attention of the reader.

Mr. Gaskell of the Swan-street hospital to whom I am indebted for a valuable notice of the practice in that hospital, after observing that death takes

place in cholera under two very opposite states the one of asphyxia, the other of syncope, and that more patients die in the latter than in the former state, proceeds to remark, that—"Remedies which are capable of removing the obstructions in respiration are only indirectly calculated to excite the heart's action, and hence the medicine which is beneficial in one case is totally inapplicable in the other. This circumstance may afford a very probable solution of the reported success of remedies diametrically opposite in their properties. If to this be added the fact that the powers of the system have the chief share in working every cure, we have no difficulty in explaining how so many dissimilar remedies have been employed in cholera. The treatment in the Swan-street hospital was so varied and opposite that a general classification of the remedies in use there is all that I can furnish. Bleeding as a means of removing the asphyxiated state was found to be a most important remedy, especially where the case came under treatment early. The quantity of blood abstracted depended on the state of the constitution and the stage of the disease. On the 3rd of September I took forty-five ounces from a muscular man who had been suddenly attacked, and was removed to the hospital very early; he recovered in a few days. Emetics were often employed as auxiliaries to venesection, or they were used alone; mustard, muriate of soda, sulphate of copper, tartarized antimony, and carbonate of ammonia were the

medicines of this class most commonly given. Repeated doses of the three first were rarely exhibited, but of the two last this was the ordinary mode of exhibition. Having heard of the successful employment of the tartar emetic in repeated doses at the Knott Mill hospital, I was induced to try the effect of a stimulating emetic; the carbonate of ammonia appeared most suitable, and the results of one or two desperate cases showed it to be a valuable remedy: the dose prescribed was one or more repeated every hour. The remedies given with most advantage in cases where death seemed likely to occur by syncope, were powerful stimulants, viz. brandy, Aromatic spirit of Ammonia, Spirit of Sulphuric Æther, Carbonate of Ammonia, and Oil of Turpentine. These were freely given, both by the mouth and rectum, and the oil of turpentine was applied to the surface with great benefit.

In cases of a mild nature small doses of calomel and opium, with the carbonate of ammonia in effervescence were highly serviceable.

After the trial of various means to remove cramps in the lower extremities, I found that irritating applications in the lumbar region had a very decided effect:—the best mode of producing this irritation is to apply flannel or lint saturated with Oil of Turpentine, at the same time guarding against the evaporation of the turpentine.

In cases where the cramps were not confined to the lower extremities large doses of calomel appeared exceedingly useful; but when the congestion

was very great the efficacy of calomel as an anti-spasmodic was much diminished. This I conceive may partly arise from the presence, in such cases, of a larger proportion of alkaline fluid in the stomach, which invariably decomposes the calomel, a protoxide of mercury being formed. Continued small doses of calomel seemed to be injurious by weakening the powers of the system.

The acetate of lead was used in two states of the system, viz. : on the supervention of bloody evacuations during collapse, and in diarrhœa after recovery —in the former cases ten or fifteen grains in combination with one dram of laudanum, were employed in the form of injection—in the latter from two to four grains combined with a small portion of opium were given in the form of pill every six hours. In such cases we found that the acetate gave tone to the mucous surface.

In the typhoid affection repeated application of leeches to the temples, accompanied with the exhibition of gentle stimuli, was the best practice. In some cases I had reason to think the typhoid stage was cut short by a small bleeding when re-action was commencing."

MR. LANGFORD'S LETTER ON THE TARTAR EMETIC TREATMENT.

DEAR SIR,

I received yours this morning, and have much pleasure in complying with your request, by giving a short account of the principal practical conclusions as to

the best mode of treating the spasmodic or Asiatic cholera, according to the experience I acquired during its prevalence in Manchester, and the observations I was able to make upon such cases as fell under my care, as resident surgeon to the Knott Mill Cholera hospital. I shall confine my remarks, however, to those cases which were treated upon the antimonial plan, as recommended by Dr. Reich of Berlin.

I have consulted most authors on the cholera, and have also had extensive opportunities of ascertaining the various treatment of a large circle of medical friends both at home and abroad, yet up to this moment, I do not know any plan of treatment so efficient in restoring the balance of the circulation, checking the excessive drain from the alimentary canal, and alleviating the distressing sufferings in cholera, without the dread of consecutive fever, as that which I am about to recommend.

The antimonial plan is as follows. Dissolve ten grains of tartarized antimony in seven and a half ounces of distilled water, with half an ounce of rectified spirit, of which give half an ounce every two hours, until the biliary and urinary secretions are properly restored ; then gradually diminish its frequency. Allow toast and water or whey, ad libitum ; prohibit all heat and frictions ; and give no other remedy. In all the pulseless cases and when the pulse became feeble, I applied externally cloths dipped in warm spirit of turpentine, in preference

to mustard poultices, as often as six times in twenty-four hours, over the thorax and abdomen, producing considerable cuticular excitement without vesication.

The object is to produce, instead of ineffectual retching, the continual action of full and efficient vomiting, and thus mechanically to unload the venous system, the larger internal vessels of which are always gorged with black deteriorated blood, incapable of circulating. Again, the antimony calls into action the respiratory organs, which by their vitalizing influence, are more likely to improve the morbid condition of the blood than all the salts recommended by Dr. Stevens, and which salts I am induced by observation to consider (more particularly in the aggravated forms of collapse) are only beneficial in proportion to the quantity of vomiting, induced by the fluid in which they are copiously given. After the efforts of vomiting produced by the antimony, the patient will invariably exclaim that he is better. In fact the restricted and gorged vessels of the venous system, are for a time emptied, the sense of oppression at the epigastrium is diminished, and the pulse which before was imperceptible is now frequently felt at the wrist.

I have never found in the fluid ejected, after administering the antimonial, any flocculi, or that the quantity of fluid ejected was greater than what had been administered ; from which I have concluded, that the morbid action of that important

organ, the stomach, had been altered to a remedial action.

The very effort of the vomiting becomes changed from the characteristic *squirt*, which appears to depend on the sole contraction of the stomach, to another which I would call a general muscular effort and which is decidedly remedial.

The dejections from the great extent of the course of the intestines, will be found more tardy in their changes, assuming by slow degrees a thicker and more gruelly aspect, and the voice, with the countenance will soon improve. The return of the secretions of the bile, will first be apparent in the various tinges of a grass green colour of the ejected fluid, and in the course of thirty hours, upon an average, the urine is restored. Three or four doses of castor oil are now given at intervals of six hours and the same number of common enemata are administered, in order freely to cleanse the lower intestines.

Should the least tendency to drowsiness be apparent on the restoration of the secretions, *immediately shave the head,* and apply a few leeches ; watching the patient at this important crisis with the utmost attention. When the bile is restored the stools are invariably of a bright yellow colour : I then give tonic bitters as the Infus : Calumbæ, and for some time see that the patient abstains from solid meats.

I now subjoin a numerical account of the result of eighty cases, and to show more clearly the efficiency of this remedy in the various stages of the disease,

I have classed them under the three following heads.—

1st.—Incomplete collapse: in this, serous stools are present and there is an absence of urine. The skin is warm, the tongue is warm, and there is a tolerable pulse.

2nd.—Complete collapse: with cold skin and tongue; with feeble pulse.

3rd.—Pulseless collapse: no beat at the radial artery, with all the symptoms in an aggravated form.

CLASS.	RECOVERIES.	CLASS.	DEATHS.
1	25	1	0
2	19	2	11
3	9	3	16
Total.	53	Total.	27

Seven of the deaths included in the table were attacked with bloody stools, an invariably mortal symptom.

My esteemed friend, Mr. W. B. Stott, surgeon, of Manchester, who in the first instance introduced to my notice the practice of Dr. Reich, has by his indefatigable exertions been equally successful in the treatment of thirty-two cases.

In addition to numerous other practitioners in Manchester, who have obliged me with their favourable opinion of the practice—I can refer with confidence to Mr. Ollier, surgeon of the New

Bailey prison, who has publicly testified his approbation, from the success attending its adoption in twenty cases treated by him in that establishment, and which passed under my own observation.

He states "I have had the enviable pleasure of being a witness to its effects at the bed sides of prisoners, who, after a pulseless, hopeless state of suspended animation continuing for many hours, have been restored to life without the dread of consecutive fever."

Should the above general observations be worthy your notice, I beg your acceptance of them; and remain with much esteem,

Your's truly,

J. LANGFORD.

Member of the Royal College of Surgeons.

Barton, near Manchester,
April 1833.

To Dr. Gaulter.

CHOLERA IN THE TOWNSHIP OF MANCHESTER.

Population 142,026. Number of cases from the commencement of the disease in May, to December, 1832.	ATTACKED.	DIED	RECOVERED.	DEATH OR RECOVERY UNREPORTED.
Treated at the Swan-street Hospital.....	443	234	209	
Ditto, at the Knott Mill do.	242	122	120	
Ditto, at their own dwellings.	640	318	295	27
Total.....	1325	674	264	27

CHOLERA IN SALFORD.

Population 40,786. First cases June 26th and July 13th, last case Novr. 7th 1832.	ATTACKED.	DIED.	RECOVERED
In the township (all treated at home).....	640	197	428
In the New Bailey Prison...	60	19	46
Total.....	700	216	474

CHOLERA IN THE TOWNSHIP OF CHORLTON-UPON-MEDLOCK.

Population 20,569. First case July 13th, last case Decr. 4th, 1832.	ATTACKED.	DIED.	RECOVERED
Treated in the Hospital.....	29	17	12
Do. at home.....	57	17	40
Particulars unreported.....	2		
Total.....	88	34	52

CHOLERA IN STOCKPORT.

Population 25,469. First cases June 19th, July 3rd, Aug. 12th. last case Oct. 15th, 1832.	ATTACKED.	DIED.	RECOVERND	EVENT UNRE-PORTED
Imported cases.....	2	2		
Native do.....	70	30	38	2
Total.....	72	32	38	2

EXTRACT FROM THE PARISH REGISTER OF STOCKPORT,

Including the number of Burials for five years during the five months corresponding with those in which cholera prevailed there in 1832.

1828.	1829.	1830.	1831.	1832.
June..49	June..42	June..48	June...84	June..33
July..43	July...43	July..47	July...71	July..48
Aug...42	Aug..36	Aug..39	Aug..70	Aug..70
Sept..55	Sept..36	Sept...40	Sept..78	Sept. .48
Oct...27	Oct...31	Oct...41	Oct...52	Oct...63
Total.226	Total.188	Total.215	Total.355	Total.262

Of the preceding numerical returns it is but just to remark that as the cases admitted into the several reports might vary greatly in their severity, the number of recoveries affords no criterion of the relative success of the treatment. The Manchester Board of Health required the cases that were reported to it to be accompanied by a circumstantial account of the symptoms, and excluded all that were not marked by those of the malignant cholera. This lessened the numbers but swelled the mortality.

I am indebted to my esteemed friend, Mr. Flint for the extract from the Stockport Register, which shows the singular, and I believe unique fact, that the mortality of the months included was considerably greater in that town during the year preceding that of the cholera, than during the cholera year itself. I have endeavoured, but without success, to procure a similar return of the number of burials in the township of Manchester before and during the year of the disease.

TABLES

SHOWING THE SECONDARY CAUSES AND COMMUNICATION OR NON-COMMUNICATION OF THE FIRST TWO HUNDRED CASES OF CHOLERA IN MANCHESTER.

No. 1, *James Palfreyman*, Aged 29.—Residence, Somerset-street, Dole Field, was removed during his illness to 47, Coronation-street, Salford, where he died. Employment, a coach painter. Constitution, a fine stout well-proportioned man. Natural susceptibility, subject to severe diarrhœa on taking weak acids. Predisposing cause, had had repeated attacks of painters' cholic, an occasional drunkard, but his general health good: earning a decent livelihood. Exciting cause, had been drunk on the Tuesday night preceding the attack, had eaten very heartily on Wednesday of lamb's head, liver, lungs and heart, and was never well after. Locality, crowding, filth, &c. Somerset-street, a cleanish street, three adults and two children in the house, clean in person and house, the street moderately clean and open. The dunghill of Wright's stables nearly opposite, behind a high wall. Palfreyman had often complained of the offensive smell issuing from it. Dates of Attack and Event, had complained all Thursday the 17th of May of nausea and pain in the bowels, seized with vomiting and purging at 1 A. M. died on Saturday $\frac{1}{2}$ past 2 P.M. (19th.) Communication or non-communication, the first case: no communication mediate or immediate with any body well or ill from an infected district.

No. 2, *Martha Chorlton*, aged 57,—Residence, 10, John's-street, Ancoats, ground floor. Employment, house-wife. Constitution, a spare woman. Natural susceptibility, subject to a bowel complaint. Predisposing cause, indifferent health the cause of which was explained after death, when there was found an encysted tumour in the right lobe of the liver, of the size and shape of an orange; not indigent, sober. Exciting cause, the afternoon before her attack she had fatigued herself by a hurried walk to St. John's-street, Chorlton Row, where she had partaken of a pint of beer with three other women. She felt pain in her belly soon after and ascribed it to the beer. None of the other women suffered from it. Locality, crowding, filth, &c. street in a very populous and poor neighbourhood: itself not one of the worst: ground floor, clean, three inhabitants. Dates of attack and event, complained first Friday, May 25th of slight P.S. Seized suddenly Saturday the 26th at 4 A. M. with rice watery discharges and cramp, died 7 P. M. the same day. Communication or non-communication, no communication with No. 1, nor with any person from an infected district.

No. 3, *Thomas Cavanagh*, aged 5,—Residence, 5, Wakefield-street, Little Ireland, ground floor. Employment, mother a washerwoman. Constitution, a very fine healthy child. Natural susceptibility, not ascertained. Predisposing cause, half starved. Exciting cause, none known. Locality, crowding, filth, &c. (see the next case.) Dates of attack and event, seized in the night between Sunday and Monday, May 28th, died at 9 Tuesday, 29th P. M. Watery P. and V. followed by hydrocephalic symptoms. Communication or non-communication, no communication with No. 1, 2, or any other source of contagion.

No. 4, *Elizabeth Cavanagh*, aged 36,—Residence, 5, Wakefield-street, Little Ireland, ground floor. Employment, mother of preceding. Constitution, healthy looking hearty woman. Natural susceptibility, had often had severe diarrhœa especially when suckling her children. Predisposing cause, half starved; got nothing but potatoes and tea when she had her meals at home: was brutally treated by the man with whom she cohabited. Exciting cause, fatigue from attending and grief for the loss of her child No. 3. Locality, crowding, filth, &c. for a picture of Little Ireland see the report of a sub-committee of the Board of Health in Dr. Kay's pamphlet "on the Condition of the Working Classes," p. 22. Cavanagh's house was not in the most depending part: it fronted an open area but an impure stream whose channel does the function of a sewer, passes by the door to an adjoining field where it collects and stagnates: house and inhabitants very filthy: three children and two adults sleeping on a straw bed. Dates of attack and event, seized on Wednesday, May 30th A. M. died 8 P. M. the same day. Communication or non-communication, as she was getting out of bed on Monday night to reach the basin for her child No. 3, he vomited upon her and part of the vomit entered her mouth. Soon after her seizure she mentioned the circumstance to her neighbour Mrs. Featherstone, adding she was taken exactly as her child had been.

No. 5, *Richard Bullock*, aged 34,—Residence, Chorlton-street, Portland-street upper story. Employment, a cobbler. Constitution, naturally strong ruined by vice and intemperance. Natural susceptibility, not ascertained. Predisposing cause, an idle dissolute incorrigible sot. Exciting cause, ascribed, himself, the attack to an injury he received in fighting the Sunday but one before. Had been drinking three whole days before his seizure, without having tasted any food. Locality, crowding, filth, &c. a recess in a street tolerably clean and open but the vicinity crowded and populous. Filthy room inhabited by five, three adults, and two children. Dates of attack and event,

seized violently as with a fit on the night before Wednesday, June 6th. died 4 P. M. the same day. Communication or non-communication, no communication with the foregoing cases. I could trace no sickness of any kind at any of this man's haunts.

No. 6, *Martha Bullock*, aged 8 months,—Residence, Chorlton-st. Portland-st. upper story; child of Nos. 5 and 3. Constitution, ricketty, emaciated. Natural susceptibility, not ascertained. Predisposing cause, nakedness and hunger; had had the small pox three weeks before. Exciting cause, none known except that its mother's altered diet might have effected it. Locality, crowding, filth, &c. [see case No. 8] Dates of attack and event, died suddenly in the Knott Mill Hospital, in the night, between Sunday and Monday, June 10th. Communication or non-communication, [see case No. 8.]

No. 7, *Jane Bullock*, aged 3,—Residence, Chorlton-street, Portland-street, upper story. Child of Nos. 5 and 8. Constitution, sickly. Natural susceptibility, not ascertained. Predisposing cause, [same as No. 6] Exciting cause, overloaded its stomach after long starvation. Locality, crowding, filth, &c. [see case No. 8.] Dates of attack and event, about 9 P. M. on Sunday, June 10th, (Whitsunday) some pain in the bowels and slight diarrhœa, died in the night. Communication or non-communication, [see case No. 8.]

No. 8, *Ellen Bullock*,—Residence, they were all three taken to the Knott Mill Cholera Hospital (then used as a Reception House) on the Thursday after her husband's death. Wife of No. 5. Constitution, weakly, emaciated, half idiotic. Natural susceptibility, not ascertained. Predisposing cause, hunger, intemperance and wretchedness; during the last winter one blanket had served for all the family. Exciting cause, During her confinement in the reception house she had been allowed a substantial diet, with ale &c. but she was terrified at being immured there alone, that she threatened to throw herself into the Medlock. Locality, crowding, filth, &c. the Knott Mill Hospital where she remained stands in a low insalubrious situation and is washed by the Medlock. Dates of attack and event, apparently well at 8 A. M. on Monday 11th seized at 9 A. M. died Tuesday 12th at 4 P. M. the night after her children. Communication or non-communication, She and her two children Nos. 6 and 7, slept in the same bed with No. 5 during the night of his attack.

No. 9, *Martha Hope*, aged 56,—Residence, a lodging-house, No. 12, Blakeley-street. Wife of a black man, a juggler. Constitution, moderately strong. Natural susceptibility, subject to diarrhœa. Predisposing cause, none known, said to be sober. Exciting cause, was attacked as she was returning from Kersal Moor Races, on Wednesday,

June 13th, but declared she had taken nothing to disorder or intoxicate her. Locality, crowding, filth, &c. street filthy, but tolerably wide and open: full of lodging-houses of the worst description: 18 persons were lodging in No. 12, when Hope was taken ill, blacks, jugglers, and trampers. Hope slept in the garret where there were seven beds. An insufferable loaded convenience close to the back door. Dates of attack and event, seized on Wednesday, June 13th; died after a very lingering consecutive fever June 23rd. Communication or non-communication, no sickness at No. 12, before this woman's.

No. 10, *Mrs. Kenyon*,—Residence, No. 2, Ashley-street. Wife of No. 18. Constitution, rather robust. Natural susceptibility, subject to bowel complaints and spasms. Eight years since had an attack of cholera that nearly proved fatal. Predisposing cause, none known: of respectable habits and good previous health. Exciting cause, had undergone great fatigue the day before her attack by cleaning after painters and whitewashers, &c. Locality, crowding, filth, &c. a clean house, on an eminence, to the front very open and airy, behind a dark narrow yard with a convenience opening into a large open cess-pool the receptacle of three others: four adult inhabitants, lived chiefly to the back. Dates of attack and event, seized on Thursday the 14th. died Sunday morning 17th. 1 A. M. Communication or non-communication, no communication whatever with any other case: her husband collected no rents in Blakeley-street, or in the vicinity.

No. 11, *James Cornfitt*,—Residence, the lodging-house, No. 12, Blakeley-street. Employment, a juggler. Constitution, vigorous, active. Natural susceptibility, not ascertained. Predisposing cause, dissolute, a drunkard. Exciting cause, none known. Locality, crowding, filth, &c. slept in the same garret with Hope. The garret might be well ventilated by windows at either end, running the length of the wall. That to the back looked to the open sky. Dates of attack and event, seized on Friday the 15th; died on Sunday afternoon 17th of June. Communication or non-communication, slept in the next bed to Hope: was taken when Hope's symptoms were said to be bilious diarrhœa and occasional vomiting.

No. 12, *Lucy Pearson*, aged 29,—From Hollinswood. Her husband an industrious man at Sharp and Roberts'. Constitution, strong, broad set. Natural susceptibility, not subject to diarrhœa. Predisposing cause, an incorrigible drunkard. Exciting cause, she had been drunk for the six days preceding her attack. Locality, crowding, &c. she was carried to the Infirmary from a filthy cellar in Prussia-street, Oldham Road. Dates of attack and event, had diarrhœa from Fri-

day, June the 15th, seized with collapse the Wednesday night following (20th) passed that night in the Infirmary: was taken thence to the Knott Mill Hospital and died Thursday, June 21st, at ½ past 11 A. M. Communication or non-communication, this woman having been two days with her husband at his lodgings in Peter's Field left him on the Thursday, under pretence of returning home, slept two nights in lodging-houses in Spital-street and Bennett-street, Oldham Road, and was then taken drunk to the cellar in Prussia-street. I ascertained that there was nobody ill in any of these houses. Her husband the night before she left him had been suddenly taken with dizziness P. and V. which went off in a few hours.

No. 14, *Sarah Hughes*, aged 31,—Residence, lodging in a house in Fernley-street. Employment, worked in a factory, but out of work when seized. Constitution, rather corpulent, strong. Natural susceptibility, none known. Predisposing cause, said to be sober, indigent. Exciting cause, taken cold on board the packet boat in coming from Liverpool the day before her attack. Locality, crowding, filth, &c. street dark, narrow, miry, and unpaved, overhung by Fernley's factory, six inhabitants in the house, tolerably clean: Fernley-street between the Medlock and the Canal. Date of attack and event, seized Saturday, June 16th, recovered June 23rd. Communication or non-communication, this woman had come the day before her attack from Holliwell, through Liverpool, where she staid 1½ hour: she had seen however, no sick person anywhere.

No. 13, *Alice Robinson*, aged 6,—Residence, the lodging-house 12, Blakeley-street. Employment, a hawker. Constitution, small, spare. Natural susceptibility, subject to relaxed bowels. Predisposing cause, an inveterate sot. Exciting cause, drunk on the Saturday night. Locality, crowding, filth, &c. [see case No. 11.] Dates of attack and event, seized about 3 A. M. Sunday 17th; died the next day. Communication or non-communication, slept in the same garret with the preceding.

No. 15, *John Bennett*, commonly called crutched Jack. Residence, 12, Blakeley-street. Employment, a vagabond. Constitution, deformed: went on two short crutches. Natural susceptibility, none known. Predisposing cause, notoriously drunken and profligate. Exciting cause, was in a drunken row on the night before his attack. Locality, crowding, filth, &c., slept in a room under the garret where Hope, &c., slept. Dates of attack and event, seized on Sunday morning 17th, died the same day. Communication or non-communication, had not waited on Jim or Hope.

No. 16, *John Myers*, aged 16.—Residence, cellar, 19, Grove-street. Employment, a plumber and glazier. Constitution, healthy. Natural susceptibility, subject to bowel complaints. Predisposing cause, none known. Exciting cause, had eaten gooseberry pudding for his dinner on the day of his attack. Locality, &c., cleanish cellar. Dates of attack and event, seized Sunday 17, recovered June 21st. Communication or non-communication, no known communication with any other case.

No. 17, *Jane Lewis.* Residence, lodging house, 12, Blakeley-street. Employment, wife of a black—a tramper. Constitution, robust and hearty. Natural susceptibility, not ascertained. Predisposing cause, in the 6th month of uterogestation. Exciting cause, great terror and agitation at the removal of Cornfitt to the Cholera Hospital. Locality, the same garret with Hope. Dates of attack and event. Seized with prem. sympt. in the night between Sunday and Monday 18th : died the same day. Communication or non-communication, communicated freely with Hope and Cornfitt.

No. 18, *Mr. Kenyon*, aged 63.—Residence, 2, Ashley-street. Employment, a collector of rents; husband of No. 10. Constitution, a large man, rather corpulent: hearty. Natural susceptibility, not ascertained. Predisposing cause, none known: a steady respectable man in easy circumstances. Exciting cause, distress and alarm at the death of his wife : dated his illness from the time he saw her in the coffin, at six A. M. on the day of his attack : had taken two aperient pills early the same morning, they began to operate about noon, and the purging continued. Locality, crowding, filth, &c., (see case 10.) Dates of attack and event, seized Sunday afternoon 17th; collapse came on with a fit, in which he fell from his chair: he died the following day. Communication or non-communication, slept with his wife the first night of her illness, not after.

No. 19, *Sarah Clegg*, aged 53.—Residence, Hewitt-street, behind Mr. Fernley's factory. Employment, a widow : kept house for her children. Constitution, a stout and very healthy looking woman. Natural susceptibility, subject to bowel complaints ever since she had her last child. Predisposing cause, none known : a sober decent woman. Exciting cause, none known, seized soon after a wholesome meal. Locality, crowding, filth, &c., a filthy unpaved street, not far from the canal and the Medlock, the end where she lived was open ; a large pig-stye opposite the door, but at some distance ; house clean, three inhabitants. Dates of attack and event, seized Tuesday afternoon, the 19th June with P. and died $\frac{1}{2}$ past 12 Friday A. M. 22nd. Communication or non-communication, not the slightest trace of communication.

No. 20, *Mary Lea*, aged 65.—Residence, a cellar in Chambers' buildings, near Commercial-street, Knott Mill. Employment, wife of a pensioner residing at Wigan, kept house for her son and daughter. Constitution, a hearty looking woman. Natural susceptibility, none known. Predisposing cause, indigent but sober, in good health. Exciting cause, the evening before her attack had taken buttermilk and porridge for supper, but this generally agreed with her; was seized on her way to Wigan, where she intended to go on foot. Locality, crowding, filth, &c., a clean but very close cellar; ground near open on every side, situation low, not far from the Medlock, three inhabitants, clean. Dates of attack and event, seized at noon on Wednesday, June 20th, died the same day, 8½ P. M. Communication or non-communication, had been near nobody sick of any description, nor had her children.

No. 21, *George Jones*, aged 29.—Residence, taken from his barge, to 12, Clarence-street, Hulme. Employment, barge-man, belonging to the flat Whitehead, on the Duke's canal. Constitution, a fine florid complexioned stout young man. Natural susceptibility, not ascertained. Predisposing cause, none known, of sober respectable habits. Exciting cause, took on Tuesday the 15th, when the barge was lying near Liverpool, some salt water as an aperient; it had the intended effect, but the diarrhœa continued till his attack: was making a violent effort to bring the flat to at eleven A. M. Sunday, when he felt suddenly worse. Locality, crowding, filth, &c., the Mersey and Duke's canal: barge moderately clean: few men on board. Dates of attack and event, seized with P. D. June 15, (Tuesday,) with cholera, June 24, Sunday recovered after V. S. and the non-purgative salts. Communication or non-communication, the first case in Hulme. Had had no communication with any sick person in Liverpool or any where else: all well on board when they left Liverpool, as was attested by the inspector of boats.

No. 22, *James Falkner*, aged 74.—Residence, 42, Back Ancoats-street, ground floor. Employment, a sawyer. Constitution, stout heavy old man, who continued to follow his employment. Natural susceptibility, none known. Predisposing cause, none known, in good previous health, in indifferent circumstances. Exciting cause, none known, had taken nothing but his ordinary food. Locality, crowding, filth, &c., street paved, dirty, populous vicinity: inhabited a back room (with two other persons) looking on a close court with a large open cess-pool under the window, the stench of which was intolerable. See plate fig. 2. Dates of attack and event, diarrhœa on Thursday 21st June, collapse on Friday night: recovered through secondary fever.

Communication or non-communication, had seen no one ill of any disease whatever.

No. 23, *Thomas Woodall* aged 32.—Residence, Allport, Deansgate, middle floor. Employment, sawyer at Cooper's, Great Bridgewater-street. Constitution, moderately stout. Natural susceptibility, bowels naturally relaxed, and subject to severe cramps after drinking. Predisposing cause, a hard drinker: good general health—not poor. Exciting cause, none known: no error of diet. Locality, crowding, filth, &c., Allport, an open area: several heaps of filth and decaying vegetables in it, and pools of impure stagnant water: a densely populated vicinity—house not crowded, moderately clean. Dates of attack and event, seized with P. S. Saturday morning, 23rd suddenly worse Sunday morning, June 24th; recovered. Communication or non-communication, no trace of communication.

No. 24, *Mark Mellor*, aged 34.—Residence, cellar under 4, Dean's-street, near Port-street, Ancoats-street. Employment, worked in a cotton factory, out of work. Constitution, naturally strong. Natural susceptibility, not ascertained. Predisposing cause, very indigent, out of work six months: good health. Exciting cause, on the afternoon of his attack, walked to Maberley and back, thirty-two miles, in search of work; drank there some ale seven years old, which disagreed with him. Locality, crowding, filth, &c., cellar, one small dark wretched room, with a brick floor: 6 inhabitants,—3 adults, 3 children; very dirty, street paved; narrow and filthy. Dates of attack and event, seized June 23, P. M. discharged cured June 29th. Communication or non-communication, no trace of communication.

No. 24B *Elizabeth Falkner*, aged 73.—*R. 42, Back Ancoats-street. E. wife of No. 22. C. naturally strong. N. S. easily relaxed. P. C. general health good.—See No. 22. E. C. distress and fear at the seizure of her husband. L. C. F. &c., see case 22. D. A. E. seized on Monday morning, June 25, at 6 A. M., fell on the bed in what was called a fit; she died on Tuesday at $\frac{1}{2}$ past 11, A. M. C. N. C. had attended on and slept in the same bed with her husband since his attack.

No. 25, *Elizabeth Bousfield*, aged 45.—R. Woodward's-court, thence removed to No. 5, Silver-street, Newtown. E. fent stitcher. C. naturally strong. N. S. easily relaxed. P. C. very destitute and dirty, slept on straw in the same room where the Nobles No. 32, &c. slept. E. C.

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* In order to avoid repetition the *initials* of the headings will now be adopted, as R. residence. E. employment. C. constitution. N. S. natural susceptibility. P. C. predisposing cause. E. C. exciting cause. L. C. F. &c., locality, crowding, filth, &c. D. A. E. dates of attack and event. C. N. C. communication or non-communication.

ate stinking pork for several suceessive days previous to her attack: this produeed purging all night, but it went off in the morning; was greatly terrified at the fate of the 4 ehildren, eases 26, 27, 28, and 32. L. C. F. &e., see the loeality of 32. D. A. E. diarrhœa for several days, threatening of collapse Tuesday 26th, 2 P. M. died 29th, 6 A. M Friday. C. N. C. Thomas Noble died on this woman's lap: it is to be recolleeted, however, that she had had diarrhœa for several days before the ehildren were seized.

No. 26, *Thomas Noble*, aged 7.—R. Woodward's-eourt, Nicholas-street, Angel Meadow. E. mother an Irish woman, a destitute widow. C. fine healthy ehild. N. S. not aseertained. P. C. half starved and half naked. E. C. had a red herring for dinner the day before, and potatoes and baeon the day of the attaek. L. C. F. house in the corner of a very eonfined and loathsome eourt, one side the door a large puddle full of exerementitious matter and vegetable refuse: house with 6 inhabitants, very dirty. D. A. E. seized Saturday June 23d, between one and two P. M. died Sunday 4, A. M. 24th. C. N. C. the two younger ehildren, 28 and 32, had been taken two hours before.

No. 27, *Jane Noble*, aged 12.—R. Woodward's-eourt, Nieholas-street, Angel Meadow. E. mother an Irishwoman, a destitute widow. C. fine healthy child. N. S. not aseertained. P. C. half starved and half naked. E. C. had a red herring for dinner the day before, and potatoes and bacon the day of the attack. L. C. F. house in the eorner of a very eonfined and loathsome court, one side the door a large puddle full of exerementitious matter and vegetable refuse: house with 6 inhabitants, very dirty. D. A. E. seized at the same time with the preeeding, died Monday 25th. C. N. C. the two younger children 28 and 32 had been taken 2 hours before.

No. 28, *Jane Garnett*, aged 6.—R. Woodward's-eourt, Nieholas-street, Angel Meadow. E. child of the same mother, by a seeond marriage. C. fine healthy child. N. S. not ascertained. P. C. half starved and half naked. E. C. had a red herring for dinner the day before, and potatoes and baeon the day of the attack. L. C. F. house in the eorner of a very eonfined and loathsome eourt, one side the door a large puddle full of excrementitious matter and vegetable refuse: house with 6 inhabitants, very dirty. D. A. E. seized Saturday 23d between 10 and 11 A. M.; reeovered June 29th. C. N. C. Bousfield, a lodger had previous diarrhœa.

No. 29, *William Bradley*, aged 47.—R. Little Pitt street, Port-st., ground floor. E. woollen eord weaver, worked in a factory. C. small man, rather delieate. N. S. had had 3 severe attaeks of bowel eomplaint in previous years: the last attaek 2 years before. P. C. destitute. E. C.

accustomed to drink beer, but drank 3 tumblers of whiskey-punch in half an hour: diarrhœa came on immediately, and continued for 8 days: he got drunk again on the 7th day. L. C. F. he, his wife and 2 children lived in a miserable room, which looked into the same court as Falkner's, the window of which was just opposite to Bradley's: people and room filthy. See plate fig. 2. D. A. E. seized Sunday 24th, 4 A. M. with collapse; died 3 A. M. June 29th, Friday. C. N. C. notwithstanding the vicinity to Falkner's, the two families were total strangers, and had had no communication till after the commencement of Bradley's illness.

No. 30, *Jane Wilde*, aged 73.—R. Gibraltar, near Scotland Bridge. E. husband in the workhouse. C. stout old woman. N. S. subject to diarrhœa. P. C. starving, but too proud to go to the workhouse. E. C. had had nothing but tea for 3 days. L. C. F. &c, one of a group of low wretched dilapidated cabins on the edge of the river Irk, separated by narrow alleys, with gullies of impure water running down them; every angle full of animal and other filth, and the vicinity abounding in nuisances of all descriptions: inhabitants rag gatherers, et id genus omne. D. A. E. seized 24th, 7 P. M. Sunday; died 25th, 1 A. M. The daughter Ellen was taken at the same time as her mother, but had a slight attack. C. N. C. this woman seldom went out, and had been near nobody ill of the disease.

32, *Susan Garnett*, aged 3.—R. Woodward's Court, Nicholas-street, Angel Meadow. E. see case 28. C. fine healthy child. N. S. not known. P. C. half starved and half naked. Had just recovered from the measles: the 4 children were all quite well up to the moment of the attack. E. C. none known: had red herring for dinner the day before, and potatoes and bacon the day of the attack. L. C. F. &c. see case 26. D. A. E. seized 23d, between 10 and 11 A. M.; died 8 P. M., June 27, Wednesday. C. N. C. see case 28.

33, *Mary Boyd*, aged 9.—R. Becket's Buildings, Redfern-street, Miller's Lane. E. child of 38. C. delicate. N. S. not subject to disease of the bowels. P. C. father very destitute. E. C. made greatly worse by eating some rotten gooseberries. L. C. F. &c., a confined court, 5 in the house, comfortless and dirty. D. A. E. seized on the Wednesday morning, June 27th, died after a very lingering consecutive fever, July 13th, Friday. C. N. C. the first case in this court: no ascertainable communication with any other: the mother had diarrhœa for 3 days in the week before, but was quite recovered.

34, *Joseph Boyd*, aged 7.—R. Becket's Buildings, Redfern-street, Miller's Lane. E. child of 38. C. healthy child. N. S. not subject to disease of the bowels. P. C. father very destitute. E. C. seized soon after eat-

ing some decayed gooseberries picked up in the Shude-hill market. L. C. F. &c., a confined court, 5 in the house, comfortless and dirty. D. A. E. seized between 9 and 11 P. M. June 28, Thursday, died in 4 days. C. N. C. communicated with the preceding case.

No. 35, *John Boyd*, aged 4.—R. Becket's Buildings, Redfern-street, Miller's Lane. E. child of 38. C. healthy child. N. S. not subject to disease of the bowels. P. C. father very destitute. E. C. had partaken of the same gooseberries. L. C. F. &c., a confined court, 5 in the house, comfortless and dirty. D. A. E. seized about the same hour, June 28th, recovered. C. N. C. communicated with the preceding case.

36, *Mary Mather*, aged 42.—R. Becket's Buildings, Redfern-street, Miller's Lane. E. a fustian cutter. C. strong and hearty. N. S. not subject to bowel complaints. P. C. very good health; in the habit of drinking to excess on Saturday nights; not indigent. E. C. none known, no error in diet: had supped heartily before her attack on bread and milk. L. C. F. &c., house at the top of the same court, 7 slept in the same small room, 4 adults, 3 children: an open cess-pool and a slaughter-house not far off to the back. D. A. E. seized June 28th, P. M. died 30th. C. N. C. it was said that Joseph Boyd had gone errands for Mather on the Thursday; this was not true; he had been in the house in her absence, but she did not see him; there was no other kind of communication with the Boyds, or any one else.

37, *Abraham Mather*, aged 56.—R. Becket's Buildings, Redfern-street, Miller's Lane. E. sawyer. C. shrivelled, of low stature. N. S. not subject to bowel complaints. P. C. good previous health: generally sober. E. C. none known that could produce the diarrhœa; afterwards great alarm and sorrow at the death of his wife, under the influence of which he drank whiskey to excess. L. C. F. &c. house at the top of the same court, 7 slept in the same small room, 4 adults, 3 children; an open cess-pool and a slaughter-house not far off to the back. D. A. E. seized with P. S. June 28th, 11 P. M. (Thursday) collapse, suddenly at 10 A. M. July 1st, (Sunday) died Monday, July 2nd, $\frac{1}{2}$ past 4, A. M. C. N. C. was attacked with diarrhœa the same moment his wife was attacked with the severer symptoms of cholera. He therefore could not be said to take the disease from her. Slept with and waited upon her after her attack, arranged her head and kissed her in her coffin.

38, *Samuel Boyd*, aged 32.—R. Becket's Buildings, Redfern-street, Miller's Lane. E. shoemaker, father of the foregoing. C. rather delicate. N. S. subject to diarrhœa. P. C. very indigent: good previous health. E. C. great distress at the illness and death of his children: no error in diet. L. C. F. &c., house at the top of the same court, 7

slept in the same small room, 4 adults, 3 children; an open cess-pool and a slaughter-house not far off to the back. D. A. E. seized with severe diarrhœa June 30th, 10 A. M. recovered July 3. C. N. C. had attended upon his children.

No. 39, *John Brookes*, aged 46.—R. cellar, 21, Nicholas-street, Angel Meadow, E. dyer. C. naturally robust. N. S. subject to violent attacks of looseness. P. C. had been a drunkard formerly; out of work for 7 months, great destitution. E. C. had eaten some hard new potatoes the day before. L. C. F. &., cleanish cellar; 3 in it; street one of the filthiest, covered with excrementitious matter thrown into it, and decaying vegetable matter, mud, ashes, &c. unpaved. D. A. E. seized with diarrhœa, Wednesday, June 27th, collapse, Saturday 30th, died at 10 $\frac{1}{4}$ A. M. July 1st. C. N. C. no communication; had whipped his child for going to the end of the court where the Nobles lived.

40, *Elizabeth Nimmo*, aged 47.—R. Back Spear-street, a court, room in middle story. E. kept a child's school. C. weakly. N. S. relaxed from the slightest cause. P. C. asthmatic; lived chiefly on tea; in poverty; sober. E. C. none known, except fear, no error in diet. L. C. F. &c., house in a recess in the angle of a filthy court; damp, with a heap of decomposing refuse in one corner; house swarming with inhabitants. D. A. E. seized June 28th, 9 A. M. died July 2d, 8 $\frac{1}{2}$ P. M. on Tuesday. C. N. C. the day before her seizure she had assisted in washing the dead body of E. Faulkner, whose son was married to her daughter.

41, *George Nimmo*, aged 53.—R. Back Spear-street, a court, room in middle story. E. basket maker, husband of the preceding. C. tall, thin. N. S. relaxed from the slightest cause. P. C. recently recovered from dropsy; sober, indigent. E. C. none known, except distress at his wife's illness. L. C. F. &c. house in a recess in the angle of a filthy court: damp, with a heap of decomposing refuse in one corner: house swarming with inhabitants. D. A. E. seized with P. S. on Friday, June 29th, died July 6th, 12 P. M. C. N. C. slept with his wife the night after her attack and attended upon her. Jane Falkner, his daughter, had a diarrhœa for a week, dating from her father's death.

42, *Ruth Coe*, aged 74.—R. Swan-street Hospital. E. nurse from the first opening of the hospital. C. a short woman, bent and shrunk with old age. N. S. subject to diarrhœa. P. C. a tippler; naturally good health; half starved. E. C. being on board wages she took her meals out of the hospital, had had nothing but slops for several days, except gin; ate some sour gooseberry pie from a cook's shop the day before her attack. L. C. F. &c., upper ward then in use, large spacious, lofty, but not well ventilated. D. A. E. seized Saturday, June

30th, about 6 A. M. with P. S. with collapse at 3 P. M. died Sunday July 1st, 3 A. M. C. N. C. it may be remarked that at the time of her attack the cholera was confined to the district in which the Hospital is situated.

No. 43, *Sophia Doran*, aged 26.—R. Back-st. Garden-st., room in upper floor. E. a dress-maker. C. stout. N. S. subject to severe cramps but not diarrhœa. P. C. in extreme poverty and want. Pregnant. E. C. had had nothing to eat for two or three days and had been wet in the feet. L. C. F. &c. a poor lodging-house, five inhabitants, top of a narrow street: an exceedingly filthy and crowded and populous vicinity. D. A. & E. seized 3 A. M. Saturday, June 30th, with cramp in the knees and purging followed by abdominal tenderness: unequivocal symptoms of cholera did not come on till Tuesday, July 3rd, after her admission: she died after a severe secondary fever, July 13th 6 A. M. C. or. N. this woman had no communication with any cholera patient before her admission: she might seem to have taken a dose of the contagion in the hospital. On the 3rd day however Mr. Lynch observed the bilious to be interspersed with rice watery evacuations.

45, *Mary Wood*, 18.—R. No. 4, Hanover-street, room in middle floor. E. a fent-stitcher. C. robust and florid. N. S. subject to diarrhœa. P. C. none known. E. C. great fright and agitation after seeing Mather in the sling. L. C. F. &c. nine in the house: two in her room moderately clean: in the next house a tripe-boiler, the stench from it in Wood's room at times insupportable. D. A. and E. seized Sunday, July 1st in the evening: slight case; no rice water: no collapse: recovered July 5th. C. or N. on the Wednesday before had seen a cholera case interred, standing at a distance. On the Friday before had peeped over the sling in which Samuel Mather was being carried to the hospital: no other communication.

46, *John Bradley*, aged 5.—R. Little Pitt-street. Son of No. 29. C. healthy. N. S. subject to diarrhœa. P. C. none known: was quite well up to the time of his seizure. E. C. none known. L. C. F. &c. [see case No. 29.] D. A. and E. seized while in Scholfield's burying ground attending his father's funeral, Sunday, July 1st, died at $\frac{1}{2}$ past 12 the same night. (The mother had diarrhœa for eight days from June 28th.) C. N. Mary Burke living in the room above Bradley had free communication with the man and boy, and was seized with vomiting and tormisa the day of the boy's death.

47, *John Esdale*, aged 46.—R. Pilling's Court, Jersey-street: room in middle floor. E. a weaver. C. healthy. N. S. not subject to bowel complaint. P. C. extreme want. E. C. great agitation at the death

of Bradley and his son: was seized with vomiting immediately after being told of the son's death: well before. L. C. F. &c. a narrow and loathsome court with a convenience and cess-pool close to Esdale's door: room naked: three in it dirty. D. A. E. seized Monday, July 2nd, 6½ A. M. died the same day 10½ P. M. C. N. had seen No. 29, his brother-in-law often during his illness, had helped to lift up his corpse at the time it was washed: was likewise with Bradley's son after his seizure.

No. 48, *Elizabeth Booth*, aged 19.—R. Dean-street, Port-street. E. piecer. C. stout. N. S. not subject to bowel complaint. P. C, none, good health. E. C. none known: no error of diet. L. C. F. &c. nine in house: sleeps with her mother, none else in the room. (see No. 24.) D. A. and E. seized July 2nd A. M. Monday, recovered 3rd. very trifling case. C. N. was never where there was a case of cholera: had conversed in the street with Bradley's daughter the evening before her illness.

49, *Elizabeth Sylvester*, aged 27.—R. Swan-street Hospital. E. a nurse. C. moderately strong. N. S. subject to diarrhœa. P. C. none known. E. C. had drunk to excess and eaten little since she came into the hospital. L. C. F. (see the case of Coe.) D. A. and E. seized July 1st Sunday, dismissed cured July 4th, a mild attack. C. N. free communication with the hospital cases.

50, *Joseph Chapman*, aged 26.—R. No. 45, Miller's Lane. E. a gun-smith. C. slender, weakly. N. S. subject to diarrhœa. P. C. greatly distressed by pecuniary anxieties, sober, respectable. E. C. had veal for dinner and supper the day of his attack. L. C. F. &c. street at that part open before: to the back a slaughter house and open cess-pool. D. A. and E. seized with diarrhœa Monday, July 2nd, with collapse Sunday, July 9th, 8½ A. M. C. N. no communication with the cases in the vicinity, Mathers, Boyd, Mc. Allums. Spoke on Friday, five days after the commencement of his diarrhœa with Brookes, a gun-smith in Salford, who had had a slight attack of cholera.

51, *Ralph Morris*, aged 51.—R. No. 6, Green-street, Gartside-street. E. a bargeman, (Old Quay Co.) C. delicate, of short stature. N. S. had tender bowels. P. C. none known, except weak general health, said to be sober, not indigent. E. C. none known, no error of diet. L. C. F. &c. house containing 12 inhabitants, to the back a large open cess-pool. D. A. and E. seized July 3rd. recovered July the 17th. C. N. was seized on shore, had come with a barge from Liverpool two days before, but had been near nobody ill of the disease. The trip before, Joseph Dinelly, after his arrival in Manchester, had been seized with suspicious symptoms, ascribed to some bedding

brought from Liverpool, but there was no proof that the bedding was infected.

No. 51B, *Ellen Roberts*, aged 25.—No. 3, Nicholas-street, near the passage leading to Woodward's Court, ground floor. E. a clear starcher. C. moderately strong. N. S. subject to disordered bowels, P. C. sober, ill fed, living chiefly on tea. E. C. had eaten hard peas the day before her illness. L. C. F. &c. (see case No. 39.) three in the room, decent, cleanish. D. A. and E. seized Saturday night June 30th 10 P. M. recovered July 5th; a very mild case, she had subsequently a severe collapse. C. N. on the Monday previous to her illness she went into Noble's house in Woodward's Court when the boy was lying dead and staid half an hour.

52, *Ellen Barlow*, aged 54.—R. Collyhurst. E. housekeeper, husband a logwood grinder. C. delicate. N. S. had had four or five previous attacks of bowel complaint. P. C. said to be sober, asthmatic, recovering from rheumatic fever. E. C. none known. L. C. F. &c. a stable separated from the house by a thin partition, a dunghill before the door, the mud of a winter torrent behind the house. D. A. E. seized July 4th, died July the 9th. C. N. no communication whatever.

53, *Anne Ashton*, aged 23.—R. No. 2, Chapel-court, Jersey-street. E. a power loom weaver. C. healthy looking, stout. P. C. a sober respectable woman, excellent previous health, not indigent. E. C. had eaten gooseberry pudding for dinner the day before her attack. L. C. F. &c. a very close but clean court. D. A. E. seized 8 A. M. July 2nd, Monday, with P. S. collapse on Friday, recovered. C. or N. saw Esdale, [case No. 47,] walked off to the cholera hospital; he touched her as he passed, says she was not much frightened but began to be unwell soon after: in the evening was standing opposite to Mrs. Esdale in the street when she fancied that Mrs. Esdale (who was well) had given her the disease by breathing on her; at the same time she was terrified on being told (which was not true) that Esdale's child was dying of clolera; became worse after this: no other communication.

54, *Anne Slater*, aged 48.—R. No. 8, Jackson's-row. E. keeps a huckster's shop. C. corpulent. P. C. her mind had been long dejected, not poor, sober, in good general health. E. C. none known, no error in diet. L. C. F. &c. very dirty but not confined street, heaps of vegetable and animal filth near the door, channels of impure water. C. or N. no communication with any other case.

55, *James Edwards*, R. No. 2, Dimity-street, Ancoats. E. piecer. P. C. insufficient nourishment, sober, good health. E. C. none known, no error of diet. L. C. F. &c. street closed at one end, very narrow,

badly paved, filthy, house very clean, six inhabitants. D. A. E. seized in Mc Connell's factory July 2nd, Monday, at 6 A. M.: recovered. C. N. C. no communication of any kind. (N. B. Two associated cases, Sarah and Mary Anne Williams, in the same house unreported.)

No. 56, *Anne Mahon*, aged 49.—R. a cellar under No. 115, Canal-street, Ancoats. E. cotton-baller. C. stout. P. C. a tippler, good general health. E. C. diarrhœa came on after taking buttermilk and tea for dinner, a week after she got drunk when cramp &c. seized her. L. C. F. &c. street narrowish, moderately clean, near the canal; cellar dismal, contains eight persons, five adults, three children. D. A. E. seized with diarrhœa Monday, July 2nd, worse Monday 9th, recovered. C. N. C. no communication whatever.

57, *Elizabeth Mc Allum*, Barlow's yard, Redfern-street, E. power-loom weaver. C. delicate, short stature. P. C. in the 8th month of pregnancy, weakened by previous miscarriages. E. C. none known. L. C. F. &c. very close narrow yard, an abominable open cess-pool and slaughter house near; house not crowded, clean. [back to back with Mather's.] D. A. E. seized with diarrhœa Tuesday, July 3rd, collapse on Wednesday night, afterwards fever: died July 17th. C. N. C. she was in Mather's on the Friday when Mary was ill, but then she was at that time suffering from diarrhœa.

58, *William Howarth*, aged 41.—R. Knott Mill Hospital, but officiating at the Swan-street. E. nurse, formerly artillery man. C. strong, well made man. P. C. a hard drinker; good previous health. E. C. drunk at the moment of his attack: he had received his pension money that day. L. C. F. &c. see case D. A. E. seized July 8th, Tuesday at 10 P. M. died July 4th, at 8 A. M. C. N. C. he had sat up to nurse Brooke's case, the night before his attack.

59, Peter Burns, aged 31.—R. Garden-street, Shudehill; seized at the Fever Wards. E. a hawker. P. C. convalescent from typhus fever. E. C. had overloaded his stomach the day before his seizure, eating a large quantity of fat. L. C. F. &c. Fever Wards. D. A. E. seized with P. S. July 3d, Tuesday, in the morning; collapse in the evening; died in the Knott Mill Hospital, July 4th. C. N. C. this man came into the Fever Wards June 8th, having been a fortnight ill at home: while in the Wards not visited by any friends; he had thus been certainly 25 days without the possibility of communication.

60, *William Mc Ghee*, aged 38.—R. Prussia-street, Oldham-road, garret. E. weaver. C. strong. P. C. a hard drinker, good previous health. E. C. July 2d, the day before his attack had been drinking beer, porter and rum, from noon till 11 at night. L. C. F. &c., garret

above the cellar, from which Pearson was taken: 3 persons in it, very dirty; Prussia-street, a filthy crowded street. D. A. E. seized July 3d, Tuesday 5, P. M. with vomiting and cramps; fell into a low nervous secondary fever. C. N. C. had no communication whatever with any person ill of cholera; never was in the cellar from which Pearson was taken.

No. 61, *Ellen Gordon*, aged 51.—R. Foedge-street, Little Ireland. E. works in a factory. C. naturally strong. N. S. constipated. P. C. sober, living chiefly on tea. E. C. no error of diet. L. C. F. &c., 3 in the house; English; cleanish: street tolerably open in the most depending part of Little Ireland, near the Medlock. D. A. E. seized Tuesday July 3d, 2 A. M. recovered after a severe attack, and secondary fever, July 17. C. N. C. was taken ill a day or two after the arrival from Liverpool of her aunt Ann Walker, who at that time was suffering from severe vomiting and purging. Walker and her husband, with ten others, had gone to Liverpool for the purpose of emigrating to Van Dieman's Land, and taken up their abode in the same lodging house, of these 2 had died of the cholera and 3 or 4 more had been taken to the cholera hospital. Gordon slept with Walker, and ascribes her illness to a peculiar smell which issued from the body of her aunt. Two associate cases, her husband and the lodger.

62, *Mary Barlow*, aged 40.—R. Back Spear-street, same house on ground floor below Nimmo. P. C. asthmatic, thought to be gradually sinking, able however to go to her work, lived on tea. E. C. fright at the seizure of the Nimmos. L. C. F. &c, house in a recess in the angle of a filthy court, damp, with a heap of decomposing refuse in one corner, house swarming with inhabitants, six in the room, very dirty. D. A. and E. seized suddenly July 3rd, Tuesday, 8 P. M. died July 4th, 9 P. M. Wednesday. C. N. denied all communication with the Nimmos except offering Mrs. N. her pipe, which she refused. N. B. Barlow's husband a paviour had, subsequent to his wife's death a severe attack of diarrhœa which threatened to pass into collapse.

63, *Elizabeth Sharples*, aged 63,—R. No. 52, Back Irk-street. E. stay-maker, but long out of employment. C. robust for her age. N. S. subject to a bowel complaint. P. C. half famished, lived on tea and bread, sober. E. C. none known, no error of diet. L. C. F. street unlevelled; unpaved the contents of the common sewer running above ground close past the door, the Irk a stone's throw from it, furnitureless house, four adults and three children lived in it half starved and half naked, sleeping all on the floor. D. A. and E. seized with P.S. Wednesday the 4th, collapse on Friday the 6th, died Satur-

day afternoon. C. N. said not to have been out of the house for three months, nobody ill in the vicinity, positively declares that there had been no communication direct or indirect with any body ill.

No. 63. *Hugh Sharples*, aged 4,—R. No. 52, Back Irk-street, grandson of No. 63. P. C. half starved, in rags. E. C. none known, no error of diet. L. C. F. &c. street unpaved the contents of the common sewer running above ground close past the door, the Irk a stone's throw from it, furnitureless house, four adults and three children lived in it half starved and half naked, sleeping all on the floor. D. A. E. seized at the same time as his grandmother on Wednesday the 4th. died after hydrocephalic symptoms July 15th. C. or N. no communication whatever with any case out of the house and seized simultaneously with the grandmother.

65, *Esther Lipsey*, aged 66,—R. No. 22, Cellar Crown Lane, Blakeley-street. E. a rag gatherer and toffy seller. C. naturally strong. N. S. subject to diarrhœa. P. C. famished, never had a day's serious illness before. E. C. had been wet through the day before her seizure. L. C. F. &c., street unlevelled, very muddy, a large midden nearly opposite the cellar, this furnitureless, damp, dirty; two inhabitants. D. A. and E. seized with collapse July the 4th. Wednesday, after ten days previous diarrhœa, died July 5th $8\frac{1}{2}$ P. M. C. or N. collected rags only in the immediate vicinity where she was the first case, had seen nobody ill of the disease.

66, *Samuel Hayman*, aged 53,—R. No. 7, Back Nicholas-street, Angel Meadow. E. market carter. C. of short stature, moderately strong. N. S. subject to diarrhæa after getting wet. P. C. half starved drinking sometimes to excess but not a sot, pretty good health. E. C had been wet to the skin the night before his attack without changing, no error in diet. L. C. F. &c. a close narrow alley shut at one end, a convenience and open cess-pool just below the window, house at the end, and back to back to Brooke's cellar, naked, dirty, six inhabitants. D. A. and E. seized with P. S. Thursday, July 5th. recovered after complete collapse. C. or N. his wife had accompanied Ellen Roberts to the Hospital June 30th, had seen her several times since she came out, he never, the clothes Ellen wore had been washed in Hayman's house, but his diarrhœa had begun before that time.

67, *Jane Macbride*, aged 34.—R. Swan-street Hospital. E. one of the nurses. P. C. she was a drunkard, good previous health, imperfect nutriment, chiefly tea. E. C. had been in the habit since she became a nurse of sucking lemons when thirsty, had been drunk on the Monday night before her attack. D. A. and E. began to have severe

diarrhœa Thursday, July 5th, collapse on the 7th, 10 P. M. C. or N. attended on the cholera patients.

No. 67, *Elizabeth Sharples*, aged 34.—R. Back Irk-street. E. a throstle spinner, grand-daughter of No. 63. C. strong. P. C. (see case No. 64.) E. C. none known, no error of diet. L. C. F. &c. (see case No. 63.) D. A. and E. seized Friday the 6th at 8 A. M. died 8th on the Sunday night. C. or N. slept with No. 63, while she was suffering from mild premonitory symptoms.

69, *Mary Walker*, aged 30,—R. No, 15, Friday-street, Little Lever-st., lodged with the next case. E. a woman of the town. C. very corpulent, florid complexion. N. S. had ordinarily three motions daily. P. C. a gin drinker, but in excellent health. E. C. had been drunk and crying after Barlow's funeral the night but one before her attack: dreaded an attack of the disease. L. C. F. &c. clean decent house, street very narrow, unpaved, strewn with ashes and impurities, a channel of filthy water on one side. D. A. and E. seized 7 A. M. July 7th. Saturday died the same day 4 P. M. C. or N. she, Mrs. Isaacs, and Barlow's husband, went into the Hospital dead-house to take off Mrs. Barlow's wedding-ring—Walker forced it off after great efforts, made necessary by the incurvation of the finger, had previously helped Isaacs to put Mrs. Barlow into the sling,

70, *Elizabeth Isaacs*, aged 59.—R. No. 15, Friday-street, Little Lever-street. E. kept a mangle. C. moderately strong. P. C. none known, sober. E. C. terror and distress at Barlow's fate who was her daughter. L. C. F. &c. clean decent house, street very narrow, unpaved, strewn with ashes and impurities, a channel of filthy water on one side. D. A. and E. seized with diarrhœa July 7th. 7 A. M. the same time as Walker with whom she slept, collapse early on the 9th. died 2 P. M. C. or N. mother to Barlow she put her into the sling, washed her sheets and went into the dead-house to take off her ring.

71, *Jane White*, aged 31.—R. Cellar under 60, Silver-street, Portland-st., D. A. and E. seized on Saturday, July 7th, collapse on Friday, July 8th, died Monday 2 A. M. C. or N. had come from Liverpool, the day of her seizure where it was said that she had been staying in house with a woman ill of cholera.

72, *Mr. Holroyd*, aged 23.—R. Long Millgate, E. surgeon. C strong, florid. N. S. not subject to diarrhœa. P. C. none known, temperate, in good previous health. E. C. no error in diet. L. C. F. &c., left bank of the Irk. D. A. E. seized July 7th, Saturday night, 12 o'clock: recovered after 3 weeks. C. N. C. one of the staff of the Swan-street Hospital: had been on the day of his attack in particular attendance upon Howard.

No. 73, *John Williams*, aged 62.—R. 75, Port-street. E. a fustian cutter. C. slender and tall. P. C. none; good general health; not indigent, sober. E. C. none known; no error in diet. L. C. F. &c., open before the house which looks towards the canal, behind it the offensive court of case 22: house 4 in it; airy, clean. D. A. E. seized Saturday 3 P. M. July 8th, recovered in a few days. C. N. C. no communication whatever.

74, *William Howard*, aged 66.—R. cellar under 20, Hanover-street. E. a sawyer, formerly in the life guards. C. stout florid old man. P. C addicted to drink formerly; not in liquor lately, good general health. E. C. had dined on liver and bacon, which generally agreed with him. L. C. F. &c., a clean decent cellar, inhabited at the time of his attack by 3 families, 10 in all, 6 adults, 4 children, the street a declivity, tolerably open and wide, dirty, and full of lodging houses and beer shops. D. A. E. seized July 6th, 1 A. M. (Friday) with diarrhœa; recovered after collapse, July 17th. C. N. C. had communicated freely with both the Mathers, who were relations; undressed Abraham, and put him into the sling. A family that lived with the Mathers had removed after Mary Mather's attack, into Howard's cellar.

75, *Mary Jackson*, aged 31.—R. 3 Little Pitt-street, Port-street. E. worked in a cotton factory. C. emaciated. N. S. alternately relaxed and constipated. P. C. sober; in tolerable health; distressed in mind; pregnant of her third illegitimate child, by a man to whom she was to have been married on the day of her seizure. E. C. had eaten a hearty supper of new potatoes and buttermilk. L. C. F. &c. the house looked to the back, on a court separated from that described in cases 22, 29, only by a low wall; in this 2nd court a large open cess-pool, the receptacle of 4 convenienees; street paved, but narrow and filthy room 3 inhabitants. D. A. E. seized July 7th, 1 A. M. Saturday: miscarried 4 hours before her death on the 11th, at 7 P. M. C. N. C. living next door to Bradley's she had been in and out during the boy's illness, and had washed the room when the father was lying in it a corpse.

76, *Anthony Hollins.*—Aged 55.—R. 22, Hanover-street, middle story. E. leather dresser. C. stout, rather corpulent. N. S. subject to bowel complaint after intoxication. P. C. a sot: drunk sometimes for 3 weeks together. E. C. drunk at the time of his first seizure: had a fatal relapse after an error of diet. L. C. F. &c., for the street see 74; house, a lodging house, containing 4 families, Hollins's wife abominably dirty in her habits; 2 in the room. D. A. E. seized with diarrhœa, Saturday July 7th: much worse Tuesday 2 P. M.—re-

covered and dismissed the 16th: came in again soon after in collapse, and died 17th, Tuesday 11 ½ P. M. C. or N. no communication whatever.

No. 77, *Thomas Sharples*, aged 4.—R. Back Irk-street. E. cousin to Hugh, (case 64.) L. C. F. &c., (see case 64.) D. A. E. seized on Sunday 8th July, case mild one : not reported. C. or N. free communication with the others.

78, *Elizabeth Draper*, aged 3.—R. Back Irk-street. E. cousin to Hugh, (case 64.) D. A. E. seized on Sunday morning 8th July, and recovered after severe hydrocephalic symptoms. C. or N. free communication with the others.

79, *William Gillman*, aged 35.—R. 10, Newton-street, Ancoats. E. moulder in an iron foundry. C. athletic robust man. P. C. a hard drinker ; excellent health ; not indigent. E. C. walked to Chorley, 21 miles, Sunday 8th, got drunk there with low priced beer, diarrhœa came on immediately afterwards. D. A. E. seized with diarrhœa Sunday 8th, much worse, 2 A. M. 11th, Wednesday recovered C. or N. no communication whatever.

80, *Sarah Dennis*, aged 25.—R. 51, Back Irk-street, E. worked in a factory. C. short, moderately stout. N. S. not subject to diarrhœa. P. C. none known ; sober ; very poor. E. C. no error of diet. L. C. F. &c., see case 63. D. A. E. seized July 7th, recovered in four days. C. or N. see case 81.

80B, *Daniel Kemp*, aged 58.—R. alley in Shepley-street, Bank Top, behind the Plume of Feathers. E. fustian-cutter. C. stoutish. N. S. subject to disordered bowels from a painful hernia. P. C. depressed in his mind ; in moderate circumstances ; out of health for many weeks. E. C. none known, no error in diet. L. C. F. &c., 2nd house in a narrow covered entry, 4 in the house, the room they inhabited looks on an open cess-pool and two conveniences, frequented from the Plume of Feathers, and situated in a very confined yard. D. A. E. seized Sunday 8th, with P. S. collapse on Tuesday, died. C. or N. no communication whatever, (associated cases his wife and daughter, 1st from smell, 2d, fright.)

81, *Edward Dennis*, aged 28.—R. 51, Back Irk-street, next door to case 63. E. spinner. C. tall spare. N. S. none. P. C. very indigent. E. C. no error of diet. L. C. F. &c., for the locality see case 63. D. A. E. seized with P. S. Monday, July 9th, recovered after collapse, July 17. C. or N. his sister (case 80) had been into Sharples' during her illness ; he had not, but stood at the door when the old woman was taken to the hospital.

82, *John Percival*, aged 42.—R. Redfern-street. E. brick setter. C.

strong. N. S. not subject to a bowel complaint. P. C. in good health; sober, in comfortable circumstances. E. C. none known. L. C. F. &c., 7 of family, clean, house clean, street moderately wide and clean. D. A. E. seized on Monday 9th, with P. S. worse on Thursday, recovered. C. or N. no communication direct or indirect.

No. 83, *Bella Comerford*, aged 35.—R. 15, Nicholas-street. C. rather delicate. N. S. was brought to bed 3 weeks before: weakly for some time: insufficient food during her convalescence from parturition. E. C. had eaten a veal dinner before she felt herself unwell. L. C F. &c., see 39, a cleanish but ill furnished room, 7 inhabitants. D. A. E. seized at 6 A. M. July the 10th, (Tuesday) with equivocal symptoms; five days after her admission into the hospital decided symptoms came on. C. or N. Ellen Roberts had been to to see her several times since she came out of the hospital; Ellen then well: no other communication.

84, *Bridget Gray*, aged 70.—R. cellar in court out of Garden-street, near No. 20. E. no employment, nearly blind. C. strong for her age. P. C: lived chiefly on tea, very destitute. E. C. had eaten pigs' cheek and cabbage for dinner 2 days before, which had disagreed with her. L. C. F. &c., a dark damp unfurnished cellar, 3 adults and 4 children in it; court one out of 3, all full of nuisances and walled in with high houses, the nuisances are an open cess-pool, pigstyes, a slaughterhouse: stench insufferable, vicinity very crowded. D. A. E. seized Tuesday night 10th, died in 5 hours. C. or N. I could trace no communication. Her son who lived with her was a hawker, but he positively denied any.

85, *Edward Gainer*, aged 12,—R. cellar under No. 4, Nicholas-street. E. assisted his father in a brick croft. C. fine handsome boy. N. S. not subject to bowel complaint. P. C. in perfect health: well fed. E. C. had taken (which was not usual with him) buttermilk and porridge for supper. L. C. F. &c., for the street see 39, cellar wretched, furnitureless, damp, crowded with Irish: 4 adults and 4 children in one room, filthy. D. A. E. seized Wednesday July 11th, 2 P. M. died. C. or N. the wife and children of Brookes had come into Gainer's cellar, during Brooke's illness: no other communication.

86, *Richard Smyrk*, aged 4.—R. Allen's-court. E. father a hand loom weaver. C. fine strong boy. N. S. not subject to bowel complaints. P. C. father a sot: the family often deserted and half starved: the boy in good health. E. C. had eaten gooseberry and currant pies 3 days in succession. L. C. F. &c., 2 adults, 5 children, inhabiting one room, besides dogs, abominably dirty: house at the bottom of a kind of well, close to the edge of the river Irk; contiguous to the house a

catgut manufactory, various other nuisances near; skinners, tripe boilers, &c., 2 clean conveniences in the middle of the 'well.' D. A. E. seized Wednesday July 11th, at 3 A. M, recovered, C. or N. the first in this ill fated court: no communication could be traced between this and any other case.

No. 87, *William Cashill*, aged 49.—R. Garden-street, crowded lodging-house. E. seller of laces, formerly in the army. P. C. a drunkard: his liquo was raw rum. E. C. none known. L. C. F. &c. the worst of the 3 courts named in case 84, a most loathsome open cess-pool; pig-styes containing 16 pigs: a barrel of putrescent tripe-boiling for their food, &c. D. A. E. seized with P. S. Thursday July the 12th, with collapse, on Saturday morning, died 14th, 2 P. M. C. N. C. no traceable communication.

88, *Willam Johnson*, aged 5.—R. Coronation-court, Ashley-lane. E. son of case 96. C. a fine boy. P. C. in perfect health, parents indigent. E. C. had eaten voraciously of hard potatoes, which he vomited unchanged. L. C. F, &c., court built up on all sides: entered by a very narrow passage in the wall of which is an open cess-pool whose stench is insufferable: 4 in family. D. A. E. seized Thursday 12th, $\frac{1}{2}$ past 5. P. M. died the same night $\frac{1}{2}$ past one. C. or N. no ascertainable communication.

89, *Mr. Dunn*, aged 60.—R. Dolefield. E. tailor. C. rather corpulent. N. S. very subject to bowel complaint, and had a severe attack not long before. P. C. sober; in comfortable circumstances; good general health. E. C. had eaten veal for dinner the day of his attack. L. C. F. &c., house clean, 3 in it, street widish, cleanish, but just opposite his door lives a dealer in privy muck, there are also pig-styes, the stench of the former had been worse than usual the day of his seizure. D. A. E. seized July 12th, Thursday, recovered July 18th, Wednesday. C. or N. no communication with any other case.

90, *Sarah Lawton*, aged 32.—Jenkinson-street, Chorlton Row. E. dress-maker, but working at Mc Intosh's manufactory. C. slight, weakly. N. S. not subject to bowel complaints. P. C. emaciated by previous disease; in moderate circumstances. E. C. had overworked herself during the few preceding days. L. C. F. &c., house in Jenkinson-street, very clean; no nuisance near; street moderately clean; Mc Intosh's factory where she had worked, stands on the edge of the Medlock. D. A. E. seized July 13th, Friday 11, A. M. died Saturday 4 A. M. C. or N. the first case in Chorlton Row. No communication with any other case.

91, *John Buxton*, aged 52.—R. 41, Gun-street; back of the house looks into Pilling's-court. E. a letter carrier, formerly in the 8th foot

guards. C. naturally strong. N. S. always relaxed after excess in drinking. P. C. health deeply injured by intemperance; in decent circumstances. E. C. had been drunk for two days before his attack the first being the pension day, part of what he had was sour porter; had dined the day of his attack on lamb's head and peas; terrified at the name of cholera. L. C. F. &c., the room he inhabited (with 5 or 6 others) looked into Pilling's-court, (see case 47) and was under Esdale's, clean, comfortably furnished. D. A. E. seized Friday the 13th, 1 A. M. died 15th, 3 P. M. C. or N. had positively never been in Esdale's, though so near; nor Esdale there (Esdale after his seizure was only an hour at home) Mrs. Esdale had come to the shop for a candle, but Buxton was out with letters; no other suspicion of communication.

No. 92, *Sarah Collins*, aged 11.—R. Church Court, Angel Meadow. E. served her aunt. C. fine child. N. S. very subject to diarrhœa. P. C. in good previous health. E. C. had eaten largely of unripe cherries. L. C. F. &c. close court: open cess-pool opposite the window. D. A. E. seized 13th; died in 12 hours. C. or N. no communication.

93, *Hannah Johnson*, aged 28.—R. Cellar under No. 20, Hanover-street, E. a fustian cutter. C. stout. N. S. not subject to a bowel complaint. P. C. none known, got drunk occasionally on the Saturday night, excellent health. E. C. greatly alarmed and distressed at the seizure of her father, case 74. L. C. F. &c. (see locality of case No. 74.) D. A. and E. seized Friday, morning the 13th, died the 17th $9\frac{1}{2}$ P. M. C. or N. she had waited on her father Howard, before he went into the hospital, and helped to carry him in the sling.

94, *Elizabeth Wood*, aged 38.—R. No. 38, New Blakeley-street, near the Derby Arms. C. rather delicate, not subject to a bowel complaint. L. C. F. &c. street a high ridge of unlevelled ground strewn with filth, and an impure stream on either side, a pauper population, house decentish, five in it. D. A. and E. seized with equivocal symptoms on Friday, June 13th recovered August 6th. C. or N. on passing with her husband by the door of the Swan-street Hospital, she stood to read the daily report placarded on the gates. She became sensible in a moment of a faint sickly smell coming from the hospital and immediately turned sick, her head swam round and she had nearly fallen, soon after she lost her memory and the power of speech, this was followed by diarrhœa and extreme prostration of strength. No other communication.

95, *Hugh Cosgrove*, aged 39.—R. No. 34, Well-street, Thornley Brow, Shudehill. E. a lodging-house keeper. C. ruddy complexioned, broad set. P. C. a tippler, said to have a liver complaint. E. C.

none known, no error of diet. L. C. F. &c. street close, filthy, house decent, only seven lodgers at the time of his attack, slept in a suffocating closet. D. A. and E. seized Saturday the 14th ½ past three, died 15th ½ past 4 A. M. C. or N. no communication whatever.

No. 96, *Edward Johnson*, aged 45.—R. Coronation Court, Ashley Lane. E. joiner. C. a powerful man. N. S. subject to diarrhœa after excess in liquor and to cramps in the legs and thighs. P. C. a drunkard and slightly asthmatic and in very reduced circumstances. E. C. got drunk as he was preparing his child's coffin, deeply distressed at his loss. L. C. F. &c. (see case 88.) D. A. and E. he had had diarrhœa, sometimes better, and sometimes worse for six or eight weeks; seized with collapse Saturday morning 14th at eight, died 1 A. M. 15th. C. or N. it was said that he slept with the dead body of his child, but this was not true. Just before the boy died he had caught him up in his arms in an agony of sorrow and kissed him several times.

97, *John Ferguson*, aged 55.—R. Cellar No. 75, Hanover-street. E. jobber at the Shudehill market. C. moderately stout. P. C. very sober, indigent, had spit blood for several weeks in consequence of an accident. E. C. had overstrained himself the day before his attack and fasted for many hours. L. C. F. &c. cellar dirty, contains five for the street see case 74. D. A. and E. seized Sunday the 15th died Monday 16th, 10 P. M. C. or N. no communication of any kind.

98, *James Loyd*, aged 61.—R. No. 10, Spital-street, George Leigh-street. C. stout, robust old man. P. C. subject to rheumatism. E. C. had eaten lamb and hard peas. D. A. and E. seized July 15th, Sunday, died July 25th, 11½ P. M. C. or N. went into the hospital with very mild symptoms, in a few days the genuine disease came on; was it the natural progress of the case, or the result of contagion?

99, *Mary Waddington*, aged 43.—R. Swan-street hospital. E. nurse. C. moderately stout. P. C. none known except insufficient nourishment. E. C. had been drinking some sour porter just before her attack. D. A. and E. seized with diarrhœa Monday the 16th after dinner, collapse Tuesday morning, died 17th 11¼ P. M. C. or N. free communication, observed to one of the nurses that she had never been well since she laid a woman out and carried her down to the dead house the Thursday before.

100, *Jemima Matilda Dumellin*, aged 19.—R. No. 38, New Blakeley-st., near the Derby arms. E. doll dresser. C. moderately strong. N. S. not subject to bowel complaint. P. C. very destitute, amenorrhœa. E. C. exceedingly terrified at Wood's account of her attack. L. C. F. &c. (see case No. 94.) D. A. and E. seized with equivocal

symptoms Monday morning 16th July, recovered July 23rd. C. or N. waited on case No, 94.

No. 101, *John Read,* aged 42.—R. Back Style-street. E. painter. C. moderately strong. N. S. subject to slight attacks of painters' cholic. P. C. good previous health. E. C. had breakfasted on beer and gooseberry pie. L. C. F. &c. elevated open row of houses: nearly opposite his, the convenience that serves for all the rest, very abominable: four in the house, cleanish. D. A and E. seized Monday, 16th July, recovered July 23rd, mild case. C. or N. no communication with any other.

102, *James Jenkins,* aged 38.—R. Cellar in Nelson-street, new Blakeley-street, E. hatter. C. a delicate, small man. N. S. subject to diarrhœa after drinking. P. C. a tippler, indigent, in good previous health. E. C. none known, except that he dreaded an attack. L. C. F. &c. cellar without an article of furniture, six of family, the Irk runs under the cellar, door in a passage close to the river up which the fœtor is intolerable from a cess-pool and a skinner's yard, street open but a sewer runs down it above ground. A bone boiler has his place a little higher up, and it was said that he had just thrown several tons of rotten salmon into the river. D. A. and E. seized at 8 A. M. Tuesday morning, July 17th, died July 18th. 9 A. M. C. or N. no communication whatever, he was so afraid of the disease that he would not walk on that side of the street on which the cholera hospital was situated.

103, *Anne Bamburgh,* aged 71.—R. No. 21, Crown Lane. C. naturally strong. N. S. subject to a bowel complaint. P. C. a drunkard, asthmatic, indigent. E. C. she had supped before her attack, on red herring, hard potatoes and butter-milk. L. C. F. &c. three in the house: very dirty cow-house and pig-styes opposite the door. D. A. and E. seized 17th. July 2 A. M. died 17th July, $11\frac{1}{2}$ P. M. C. or N. no communication with any other case.

104, *Alice Humphreys,* aged 30,—R. Irwell Court, Dole Field. E. husband a horse dealer. C. small, slight. N. S. subject to violent cramps in the stomach and bowels. P. C. said to be sober, had enjoyed good general health, not indigent. E. C. seized two hours after eating a dinner of pork stakes, hard new potatoes and beer. L. C. F. &c. house cleanish, two in it, court moderately open, opposite the house a small stable yard and dunghill. D. A. and E. seized suddenly 3 P. M, July 18th Wednesday, died in seven hours. C. or N. no communication whatever. Anne Sweetman nursed her, washed all the clothes she had dirtied and the corpse, slept in the same bed with her all night and remained perfectly well.

No. 105, *Mary Comerford*, aged 10.—R. No. 15, Nicholas-street. E. C. the day before had butter-milk and porridge to dinner which she dislikes. D. A. and E. seized Thursday, July 19th, 7 A. M. died July 25th, 3 P. M. after secondary fever. C. or N. this girl was taken ill while her mother was in the hospital. She had never been into the Hospital to see her mother, her sister had. The night before her seizure she had been into Church Court, to see the dead body of the girl Collins after it was laid out, and when she returned could eat no supper.

106, *Thomas Hughes*, aged 36.—R. Lodging at No. 60, St. James'-street, St. George's-street. E. bargeman from Birmingham. C. athletic, fresh complexioned. N. S. not ascertained. P. C. said that he never had a day's illness in his life, had been a hard drinker. E. C. none known. L. C. F. &c. Birmingham canal. D. A. E. seized with diarrhœa Thursday, July 19th, collapse on Sunday night 22nd, died 23rd $10\frac{1}{2}$ P. M. C. or N. a boatman in an adjoining boat was seized at the same time. Hughes had seen none ill of the disease.

107, *William Stirland*, aged 29.—E. a boatman, from London. D. A. and E. seized Thursday, July the 19th, in Paddington with diarrhœa, threatening of collapse, Monday, 23rd. recovered July 31st. C. or N. no ascertainable communication.

108, *Anne Hannah*, aged 8.—R. No. 23, Back Irk-street. E. father a weaver. C. very fine girl. N. S. not subject to disordered bowels. P. C. (see case No. 110.) E. C. had supped on porridge and butter-milk. L. C. F. &e. house furnitureless, dirty, containing six children and two adults, just opposite the house the common sewer discharges its contents which runs down the street for several hundred yards into the river, gas and ammonia works a little higher up. D. A. and E. seized Friday, July 20th, 7 A. M. died 10 P. M. C. or N. had had positively no communication with the Dennis's or Sharples's in the same street.

109, *Margaret Davenport*, aged 50.—R. Huntsman's Court, Shudehill. E. supported by her children. C. delicate. N. S. subject to diarrhœa. P. C. a tippler, half starved, distressed in mind, deserted. E. C. had a salt herring and some bad new potatoes before her attack. L. C. F. &c. court, one of the most horrid and abominable in the town, narrow dark and wet, shut at one end, two intolerable cess-pools in it, house a lodging house, swarming with the most depraved characters. D. A. and E. seized Sunday, July 22nd, recovered July 28th, a doubtful case. C. or N. no communication.

109, *William Bostock*, aged 55.—R. Allen's Court, Long Millgate. E. a match seller, an old soldier. C. slender. N. S. subject to severe

diarrhœa and cramp in the toes, these were said to have been removed by wearing an enchanted ring, and to have returned when the ring was lost. P. C. a hard drinker, a pint of rum was nothing to him, not drunk since the pension day a fortnight before : declining health, subject to a winter cough, had received a hurt in his side on the pension day. E. C. none known. L. C. F. &c. for a general account of Allen's Court, see case No. 86, room fronted the river, ground floor, the contents of a convenience on an adjoining eminence flowed past one wall of the room, and the stench was intolerable, four inhabitants, very filthy. D. A. and E. seized with P. S. Saturday July 21st collapse on Monday, died on Wednesday, 5 A. M. 25th, buried on Friday afternoon 27th. C. or N. it was falsely reported that this man had caught the discase in Warrington. His round however, for some weeks, had been Pendleton and Salford. There is no evidence that he had seen any one ill of cholera. Smyrk, (see case No. 86,) had never been near the house. The frightful explosion of the disease in Allen's Court was ascribed to this man's corpse having been kept unburried for $2\frac{1}{2}$ days.

No. 110, *Margaret Hannah*, aged 3.—R. No. 23, Back Irk-street. E. father a weaver. C. very fine girl. N. S. not subject to bowel complaints P. C. half famished, both the parents out of work for many weeks, in perfect health previously. E. C. none known. L. C. F. &c. (see case No. 108.) D. A. & E. seized Monday, July 23rd, 7 A. M. died the same day at 5. C. or. N. her sister had been removed to the hospital so soon that Margaret did not see her after her illness, being out at play: did not see her after death, nor come in contact with the bed or clothes she had used.

111, *Patrick Macbride*, aged 40.—R. No. 81, Angel-street, middle story. E. a shoe-maker. C. delicate. N. S. subject to a bowel complaint: had once nearly died of cholera. P. C. a drunkard, drank rum only, general health appeared good. E. C. was drunk from Saturday to Tuesday, the day he was seized. L. C. F. &c. 3 in the room, their habits were abominable, D. A. and E. seized Tuesday, July 24th, 3 P. M. died July 25th, 3 A.M. C. or N. no communication.

112, *Phœbe Drew*, aged 45.—R. No. 1, Court, New Blakcley-street. Wife of case No. 128. C. stout. N. S. not subject to diarrhœa. P. C. starving. E. C. Tuesday the 24th had supped on porridge and some butter-milk. Wednesday, the day of her attack, fasted. L. C. F. &c. filthy court, with high buildings round it, the entrance to it narrowed by a stable and pig-styes, two offensive conveniences at the shut end, house furnitureless, wretched, dirty, eight inhabitants, six children, dirty, naked. D. A. and E. seized with diarrhœa on Wednesday

25th. threatened with collapse Saturday, 28th, recovered August 7th. C. or N. no communication whatever.

No. 112,B *William Rarnay*, aged 28.—R. Allen's Court. E. father of case No. 127, silk weaver. C. slight. N. S. subject to relaxation from trifling causes. P. C. sober, indigent, in good health. E. C. had eaten some had new potatoes on Thursday, 26th, slight diarrhœa ever after until collapse came on. L. C. F. &c. room towards the river, 4 in it cleanish, complained of a very offensive smell from the river. D. A. and E. seized with diarrhœa, Thursday the 26th, with a threatening of collapse while in reception house on Monday, 30th of July, recovered August 7th. C. or N. had unquestionably not communicated either before the diarrhœa came on, or after.

113, *Martha Barker*, aged 43.—R. Cellar under Hanover-street. E. a washerwoman. C. slight, feeble. N. S. not subject to diarrhœa. P. C. indigent, ill-fed, sober, pretty good health. E. C. no error of diet. L. C. F. &c. 4 in the cellar, clean woman, for the street [see the case of Hollins] cellar at the foot of the street. D. A. and E. seized with severe diarrhœa Thursday, July 26th, collapse Friday night, died Saturday 28th, 4 P. M. C. or N. this woman was in the habit of washing for Davenport, case No. 109B, and her attack was ascribed to this circumstance. The last clothes however she had of Davenport's were fetched early on Thursday morning, both Davenport and Godwin being at that time perfectly well.

114, *Charles Blinkhorn*, aged 41 weeks old.—R. Cellar No. 15, Bosdin's Buildings, Long Millgate, opposite Bedford's Court, taken ill in Barker's cellar. E. father a bricksetter. C. very delicate. N. S. not subject to diarrhœa. P. C. subject from its birth to inward fits. E. C. none known. D. A. and E. seized Thursday, July 26th, with 3 fits and severe watery purging, about the same time as its nurse (the preceding case,) died July 25th. C. or N. this child was nursed by Barker but their attack was simultaneous.

115, *Margaret Glinnon*, aged 17,—R. Lodger at No. 6, Bradshaw's Gate, E. in service at Burne's, a small shopkeeper, Deansgate. C. florid healthy looking girl. N. S. not liable to diarrhœa. P. C. none known, in good health. E. C. eat, for the first time, a pickled herring for dinner on the day of her attack. L. C. F. &c. moderately clean, no nuisance very near. D. A. and E. seized Friday, 27th. 2 P. M. recovered after collapse. C. or N. no communication whatever.

116, *Anne Godwin*, aged 50,—R. Allen's Court, Long Millgate. E. housewife, husband a silk weaver. C. weakly. N. S. had annually in the autumn a severe attack of bowel complaint, had recovered a fortnight before from one of these attacks. P. C. of sober and respectable

habits, lived chiefly on tea, emaciated but better than usual on the day of her attack. E. C. no error of diet, some alarm at Bostock's death. L. C. F. &c. see case No. 86, lived in the well part of the court, room fronted the river, very clean, the sewer of the conveniences passed into the river under this house: two adults and two children. D. A. and E. seized Friday 27th 4 A. M., died at 5 P. M. C. or N. Bostock's wife came into Godwin's house on Wednesday morning her husband being dead, Anne Godwin took a note on the same day to Bostock's after his death, did not go in but stood at the door and remarked on returning that when the door opened she perceived a bad smell, there was no other communication during his illness.

No. 117, *Anne Bailey*, aged 21.—R. Allen's Court, Long Millgate. E. a carder. C. slender. N. S. not subject to a bowel complaint. P. C. indigent, long distressed in mind, in consequence of her separation from her husband. E. C. none known no error in diet. L. F. C. &c. lived in the well part of the court, ground floor looking on the river, three in the house clean. D. A. and E. seized Friday 27th, 10. A. M. died 9 P. M. the same day. C. or N. Mrs. Bostock nursed Bailey's child and Bostock himself in the beginning of his illness. Bailey was seldom in Bostock's, but she took her child home when Bostock became worse.

118, *John Cooke*, aged 48.—R. Allen's Court, Long Millgate, middle story. E. silk weaver. C. corpulent. N. S. bowels relaxed from very trifling causes. P. C. sober, moderately good health. E. C. dined on hard potatoes, terrified at what was passing in the court. L. C. F. &c. Allen's Court, lived in a middle room fronting the river, worked in an airy garret, four in the room, cleanish. D. A. and E. seized Friday, 27th, 1 P. M. with P. S. collapse at night, died Saturday, 28th, 3 P. M. C. or N. neither he nor his wife had been in any of the sick houses, as they were exceedingly afraid of catching the disease. Elizabeth Barber, an inmate went into Bailey's but not until after Cooke was taken ill. There was no other communication.

119, *Margaret Burke*, aged 26.—R. worked in the same garret as Cooke, lodged at No. 13, Hanover-street. E. a silk weaver. C. very stout, healthy looking. N. S. bowels relaxed from very trifling causes. P. C. in perfect health, suckling, sober. E. C. had eaten treacle and bread for her dinner. L. C. F. &c., Allen's Court, lodgings in Hanover-street, where she had four children, very filthy. D. A. and E. she first complained of severe pain in the belly at 1 P. M. Friday, 27th, about the same time as Cooke, collapse in the night, died Sa-

turday, 7 A. M. C. or N. this woman at the time of her first complaining had seen nobody in Allen's Court ill of cholera, never had any direct or indirect communication with them. In the course of the afternoon she went in to see Bailey who was very ill, and became herself rapidly worse afterwards.

No. 120, *Jane Smyrke*, aged 12.—R. Allen's Court, ground floor. E. father a silk weaver. C. very hearty. N. S. subject to diarrhœa. P. C. in excellent health, though half-starved. E. C. had eaten a herring for dinner the day before her attack, this generally agreed with her. L. C. F. &c. see case No. 86. D. A. and E. seized Friday, 27th. at 6 A. M. died July 25th. 9 P. M. C. or N. this girl was never in any of the sick houses, two of the other children went into Godwin's the day before Godwin's attack, but she was then perfectly well. Smyrke's and Godwin's were in fact attacked nearly at the same hour.

121. *Hannah Rainsford*, aged 86.—R. Allen's Court, ground floor, grandmother to case 117. C. hearty old woman. N. S. not subject to a bowel complaint. P. C. none except age, respectable, sober. E. C. No error of diet, in an agony of grief at the death of her grandchild. L. C. F. &c. see case 117. D. A. E. seized Saturday 28th, at 9 A. M., died 29th, at 2 A. M. C. or N. nursed her granddaughter Bailey: three hours before her seizure, went in to see her in her coffin. On being warned against it she said she did not care to live.

122, *Margaret Davenport*, aged 35.—R. Allen's Court, middle story. E. silk-weaver at home. C. delicate. N. S. subject to slight diarrhœa. P. C. destitute, in tolerable health, sober. E. C. had supped on buttermilk. L. C. F. &c. room she inhabited airy, 6, 2 adults 4 children, cleanish, fronted the river. D. A. E. seized Saturday 28th, at 5 A. M., died the same day at 4 P. M. C. or N. she had been in to see Godwin during her illness.

123, *Richard Smirke*, aged 30.—Allen's Court, middle story. E. silk weaver. C. slight. N. S. subject to diarrhœa and cramps. P. C. a drunkard, indigent, but in good health. E. C. alarmed and distressed at the sudden sickness of his child, case 120. L. C. F. &c. see case 86. D. A. E. seized Saturday morning 28th, at 9 A. M., died same day at $6\frac{1}{2}$ P. M. C. or N. carried his daughter to the Swan-street hospital.

124, *Hannah Rix*, aged $4\frac{1}{2}$.—R. Allen's Court, middle floor, daughter of the next case. C. fine child. N. S. Not subject to diarrhœa. P. C. half starved. E. C. none known, no error of diet. L. C. F. &c. middle room, fronting the river, 3 in it, clean. D. A. E. seized on Saturday morning, July 28th, at 6 A. M., died 6 P. M. the same

day. C. or N. The mother, the next case, had waited on Bostock during the latter part of his illness.

No. 125, *Elizabeth Rix*, aged 43.—R. Allen's Court, middle floor. E. a widow, a bobbin winder. C. delicate. N. S. very subject to a bowel complaint. P. C. in great destitution and distress since the death of her husband, lived on tea, very sober and respectable. E. C. no known cause of the diarrhœa, terrified at the havoc the disease was making in the court from which she fled with her children in a state of distraction. L. C. F. &c. middle room, fronting the river, 3 in it, clean. D. A. E. had had diarrhœa for a fortnight (long before Bostock's illness), seized with collapse on the day of her child's death, died after a lingering consecutive fever on the 18th. C. or N. see above, the long previous diarrhœa prevents the ascription of her death to contagion.

126, *William Turner*, aged 53.—R. Allen's Court, middle floor. E. silk weaver. C. stout. N. S. not subject to diarrhœa. P. C. very sober and regular, in perfect health. E. C. none known, had lived on bread and milk. L. C. F. &c. room towards the river, 4 in it, cleanish, complained of a very offensive smell from the river. D. A. E. seized Saturday 28th, at 2 A. M., died July 29th, at 2 A. M. C. or N. Turner and the Rarnays had lived only one week in Allen's Court, they were entire strangers, and had made no acquaintances with any of the neighbours. They had no communication whatever with any of the sick houses. This was attested by all the neighbours. Wroe, in the same house, (who escaped) had seen none of them.

127, *Sarah Rarnay*, aged 3.—R. Allen's Court, middle floor. E. child of No. 112B. C. a child of uncommon beauty. N. S. not subject to diarrhœa. P. C. perfectly well. E. C. none known. L. C. F. &c. room towards the river, four in it, cleanish; complained of a very offensive smell from the river. D. A. and E. seized Saturday 28th 2 A. M. died on the evening of the same day. C. or N. no communication.

128, *James Drew*, aged 50.—R. No. 1 Court, New Blakely-street. E. a fustian weaver. C. weakly. N. S. subject to a bowel complaint. P. C. in a state of starvation, with a wife and six children, sober, respected, in despair. E. C. had been eating bad bread. L. C. F. &c, (see case No. 112.) D. A. E. &c. seized on Saturday 28th. 8 A. M. died $4\frac{1}{2}$ P. M. the same day. C. or N. see case 112, James did not sleep with his wife during her sickness.

129, *Mary Drew*, aged 9.—R. No. 1 Court, New Blakely-street. Child of the foregoing. C. stout. N. S. subject to a bowel complaint. P. C. starving. E. C. none known. L. C. F. &c. (see case No. 112.) D. A. and E. seized July 28th, died July 29th 4 P. M. C. or N. free communication.

No. 130, *Sarah Clough*, aged 20.—R. No. 1 Court, New Blakeley-street. E. a woman of the town. C. rather stout. N. S. not ascertained. P. C. famished, not a drunkard, labouring under siphylis, otherwise well. E. C. no error of diet. L. C. F. &c., (see case No. 112,) lived in a room above the pig-styes. D. A. and E. seized suddenly 3 P. M. July 28th. died in the evening $11\frac{1}{4}$ P. M. C. N. clough had waited on Phœbe Drew.

131, *Henry Blinkhorn*, aged 11 weeks.—R. Cellar No. 15, Bosdin's Buildings, taken ill at home. Twin to case No. 114. C. very delicate. N. S. subject to B. C. P. C.. none known, tolerably healthy. E. C. none known. L. C. F. &c. dirty crowded cellar, in a close court, six inhabitants. D. A. and E. seized Saturday evening 28th July, died August 1st, 4 P. M. C. or N. this child was well till the other was brought home labouring under diarrhœa.

132, *George Dunn*, aged 22.—R. Back Hart-street. E. night-man, here called a muck-miser. C. strong, florid complexioned, robust. N. S. not subject to a bowel complaint. P. C, had never known a day's illness in his life, a hard drinker. E. C. had been drinking Tom and Jerry in very large quantities before the diarrhœa came on: he continued at his loathsome trade for two nights after. L. C. F. &c. Back Hart-street, a nest of prostitutes and vagabonds: a row of low mean cottages, the pavement before covered with every species of impurity, the cottages look on a line of conveniences belonging to Hart-street: three intolerable conveniences in the street itself, this a narrow court rather than a street. Dunn's house contained 7 adults and only one bed, with his bed-ridden mother in it. D. A. and E. seized with diarrhœa Saturday, July 28th, collapse Wednesday, August 1st, died on Friday morning at $\frac{1}{2}$ past 5, August 3rd. C. or N. this was the first case in a street which yielded so many. No communication could be traced between George Dunn and any foregoing case.

133, *Sarah Drew*, aged $3\frac{1}{2}$.—R. No. 1 Court, New Blakeley-street. Child of No. 128. C. healthy looking. N. S. subject to diarrhœa. P. C. half starved and naked. E. C. none known. L. C. F. &c. (see case No. 112.) D. A. and E. seized July 29th, recovered August 3rd. C. or N. free communication.

134, *Phœbe Drew Junr.* aged 6.—R. No. 1 Court, New Blakely-street, Child of No. 128. C. stout healthy. N. S. subject to diarrhœa. P. C. half starved. E. C. none known. L. C. F. &c. (see case 112.) D. A. and E. seized July 29th, died August 3rd. C. or N. free communication.

135, *William Hill*, aged 55.—R. Bedford's-court, Long Millgate. E tripe-

boiler. C. athletic man. N. S. not subject to a bowel complaint. P. C. a drunkard: general health good. E. C. had been bestially drunk Thursday and Friday; seized with diarrhœa on Sunday. L. C. F. &c., a narrow steep court descending from Long Millgate to the river edge, where was a tripe manufactory; for which the proprietors had been not long since indicted and fined £50. Hill's bedroom looked on a yard (fronting the river) full of cows' hoofs, &c., putrescent size, pig's meat, a pigstye and 2 filthy conveniences at one end. D. A. E. seized with diarrhœa Sunday 29th July; collapse on Tuesday morning: died after secondary fever, Aug. 6th. C. or N. no communication could be ascertained.

No. 136, *Elizabeth Barber*, aged 34.—R. Allen's-court, but taken ill at the Reception House, Ancoats. E. silk weaver, C. moderately stout. N. S. subject occasionally to diarrhœa. P. C. sober, decent, in good health. E. C. no error of diet; great alarm and vexation at being immured in the Reception House. L. C. F. &c. Reception House, a factory on the banks of the Rochdale canal at Ancoats. D. A. E. seized Sunday July 30th, 2 A. M. recovered Aug. 8th. C. or N. had seen Bailey, Cooper and Burke, after they were attacked.

137, *Martha Wright*, aged 39.—R. Allen's-court, under Rarnay's. E. washerwoman. C. stout. N. S. subject to diarrhœa. P. C. perfectly well. E. C. no error of diet: woke in a fright at 5 on Sunday morning, fancied she heard the rattling of the cholera van, and was instantly seized with diarrhœa. L. C. F. &c., see case 84: 3 in the room, clean. D. A. and E. seized Sunday, 30th, 5 A. M. with diarrhœa, recovered August 8th, a mild case. C. or N. never in the house of any other cholera patient in the court, nor they in her's.

138, *Margaret Harrison*, aged 41.—R. No. 32, Tib Lane. E. small shopkeeper. C. delicate. N. S. subject to diarrhœa, has twice had inflammation in the bowels. P. C. sober, asthmatic, in indifferent general health, not needy, depressed in mind. E. C. had dined on peas and bacon, alarmed at the progress of the cholera. She sent her daughter to read the report at the Town Hall on the day when the deaths from Allen's Court were reported, and on being acquainted with their number she was seized with diarrhœa. L. C. F. &c. ground floor, 5 in number, street open before, behind a small yard with three conveniences opening into a cess-pool. D. A. and E. seized Monday July 30th, 5 P. M. recovered August 10th. C. or N. no communication whatever.

139, *Elizabeth Hermitage*, aged 10,—R. No. 36, Watson-street, Deansgate. E. father a fustian cutter. C. delicate. N. S. not known. P. C. in good health, not needy. E. C. none known. L. C. F. &c

street and house most filthy. D. A. and E. sezed July 31st., 8 P. M. recovered August, 15th. C. or N. no commmnication whatever.

No. 140, *Evan Evans*, aged 62.—R. No. 4, Rothwell Buildings, Chepstow-st., E. helped a mangle woman. C. stoutish. N. S. 8 years since brought to death's door by an attack of cholera. P. C. an occasional drunkard, indigent, had not been quite well since he fell and broke his ribs. E. C. none known. L. C. F, &c., Rothwell Buildings, clean, moderately airy, 8 inhabitants where he lodged, the mangle-house close to the canal and near two conveniences. D. A. and E. seized with diarrhœa Wednesday, August 1st. recovered August 18th. a mild case. C. or N. no communication whatever.

141, *John Linney*, aged 71.—R. 21, Back Hanover-street. E. bobbin winder, an old soldier. C. naturally strong. N. S. not subject to a bowel complaint, but to severe cramps. P. C. in very good health; sober; respectable; poor. E. C. none known; no error of diet. L. C. F. &c., a very close narrow street, scarcely wider than an entry, but clean; no nuisance near; 2 in the house, quite clean. D. A. E. seized with P. S. on Wednesday afternoon, August 1st collapse on Friday, died Sunday morning 5th, 3 A. M. C. or N. no communication whatever.

142, *Mary Price*, aged 45.—R. a court near 32, Blakeley-street. E. in a factory, out of work. C. moderately strong. N. S. subject to diarrhœa. P. C. very indigent; in good health. E. C. none known; no error of diet. L. C. F. &c., confined filthy court and house. D. A. E. seized August 3rd, Friday died, August 7th. C. or N. no communication whatever.

143, *William Rydyard*, aged 47.—R. Swan-street Hospital. E. porter, had been an officer's servant. C. stout; rather corpulent. N. S. not ascertained. P. C. formerly a hard drinker. E. C. none known to bring on his diarrhœa; had eaten veal pie for dinner the day that collapse came on. L. F. F. &c., see case of Coe. D. A. E. had diarrhœa for a fortnight, which he concealed, seized with collapse Thursday, August 2nd, 2 A. M. died the same day 8 ½ P. M. C. or N. as the porter he never came into the wards of the hospital, except to deliver messages; but on the Sunday before the collapse came on, there being 10 cases in the dead house, chiefly from Allen's court, he assisted in putting them into their coffins and nailing them down.

144, *Charles Wright*, aged 9.—R. Allen's-court, under Rarnay's. E. son of case 137. C. strong. N. S. not subject to any bowel complaint. P. C. in excellent health. E. C. had had potatoes and buttermilk for dinner and supper. L. C. F. &c., see case 84: 3 in the room; clean. D. A. E. seized Thursday August 2nd, 10 A. M. recovered 8th. C.

or N. declares he had never been near Bostock's, nor any body sick of cholera.

No. 145, *Mary Leach*, aged 53.—R. cellar under 52, Sackville-street. E. charwoman. C. delicate. N. S. subject to diarrhœa, has had an attack of English cholera that nearly proved fatal. P. C. sober; needy; in tolerable health. E. C. no error of diet; terrified. L. C. F. &c., cellar, 2 in it, low, dark, furnitureless, but cleanish; street tolerably clean and open. D. A. E. seized with P. S. Thursday August 2nd, threatening of collapse Saturday—recovered August 6th. C. or N. no communication whatever.

146 *Jonathan Bateley*, aged 71.—R. 7, Welch's-court, Angel Meadow. E. no occupation. C. had been robust. N. S. not ascertained. P. C. sober, needy, in tolerable health. E. C. none known. L. C. F. &c., court dirty, close. D. A. E. seized Aug. 3d, Friday died Aug. 7th. C. or N. no communication whatever.

147, *Margaret Shein*, aged 26.—R. 2, Joiner-street. E. worked in a factory; out of work. C. corpulent. N. S. subject to diarrhœa. P. C. intemperate; very destitute; in good health. E. C. no error of diet. L. C. F. &c., street and house most filthy. D. A. E. seized Aug. 3d, Friday recovered, Aug. 10th. C. or N. no communication whatever

148, *Maria Dunn*, aged 30.—R. 56, Foundry-street, George's-road. E. small shopkeeper, wife of case 152. C. stout. N. S. bowels easily relaxed. P. C. intemperate, not indigent, in excellent health. E. C. wild with sorrow at the death of her father, (175): drunk. L. C. F. &c., house, six in it, cleanish, no nuisance near. D. A. E. seized 11th, 4 A. M. died the same day, 11½ P. M. C. or N. freely exposed to Vernon her father, and to the Dunns, of Back Hart-street, whence she took home the clothes George died in.

148B, *William Dunn*, aged 15.—R. Back Hart-street E. brother of case 132. C. strong. N. S. bowels easily relaxed. P. C. in perfect health. E. C. alarmed, began, he said, to feel ill when he saw George borne away in his coffin. L. C. F. &c., see case 132. D. A. E. seized with P. S. Friday afternoon, Aug. 3d, recovered Aug. 14th. C. or N. free communication; put on George's trowsers, stained by the characteristic discharges, but not till after he had begun to feel unwell.

149, *Catharine Clarke*, alias *Limer*, aged 8.—R. 79, Angel-street. C. rather delicate. N. S. subject to a bowel complaint. P. C. in good health. E. C. had eaten a large quantity of refuse gooseberries. L. C. F. &c. house a cleanish lodging house, near the bottom of the street, 2 families in it; no nuisance near; street swarming with low lodging houses, on a descent, filthy, strewn with refuse. D. A. E.

seized Saturday, Aug. 4th, 1 A. M. recovered Aug 20th. C. or N. no communication whatever.

No. 150, *Sarah Dunn*, aged 18.—R. Back Hart-street. E. daughter of case 153. C. stout. N. S. not known. P. C. in good health; destitute, of irregular habits. E. C. was carried home drunk from her brother's funeral; soon after salt and water were given her, the vomiting they produced continued, (menstruating.) L. C. F. &c., see case 132. D. A. E. seized Saturday morning, Aug. 4th, died Aug. 5th. C. or N. free communication with her mother and brother.

151, *Jane Buckley*, aged 35.—R. Swan-street Hospital. E. nurse. C. stoutish. N. S. not ascertained. P. C. a tipler. E. C. after receiving her wages on Saturday evening, had gone out of the hospital and got drunk with gin, beer and porter, had eaten besides voraciously of potato pie, bought at a cook's shop. L. C. F. &c., see case of Coe. D. A. E. seized Saturday night 11 P. M. August 4, died 5th, 7, P. M. C. or N. free communication with all the patients.

152, *Thomas Dunn.*—R. 56, Foundry-street, George's-road. E. a cooper, brother of 150. C. robust, broad set, florid. N. S. in perfect health, not indigent. P. C. a drunkard. E. C. drunk at the moment of his seizure; had lost a wife, mother, brother, and sister, and father-in-law, by the disease. L. C. F. &c., see case 148. D. A. E. seized Aug. 12th, 3 A. M. died in nine hours. C. or N. his wife had died of the disease the day before his attack; he had been with her.

153, *Sarah Dunn*, aged 57.—R. Back Hart-street. E. mother of the foregoing. C. very corpulent; bed ridden for 7 years. P. C. though bed ridden appearing to possess extraordinary vigour. E. C. said to have been drunk on the day of her son's funeral (Friday.) L. C. F. &c., see case 132. D. A. E. seized Sunday Aug. 5th, 2 P. M. died Monday 6th, 2 P. M. C. or N. George had died in the same bed with his mother.

154, *Ellen Bentley*, aged 72.—R. Hart-street. E. charwoman. C. naturally strong. P. C. in very good health, needy, sober, respectable. E. C. none known. L. C. F. &c., street moderately wide and clean at that part, 6 in the house, cleanish, their back yard is opposite to Dunn's, in Back Hart-street. D. A. E. seized Monday Aug. 6th, 6 P. M. died Aug. 7th, 6 P. M. C. or N. had had no other communication with Back Hart-street, except standing for a moment by the side of Dunn's door, without speaking to any of the family.

155, *Arthur Mac Donald*, aged 40.—R. Back Hart-street, next door to Dunn's. E. spinner. C. stout. N. S. none known. P. C. a drunkard; in want; good previous health. E. C. had been drunk 3 successive nights, Friday, (at George Dunn's funeral) Saturday and Sun-

day. On Monday, the day of his attack, had pigs cheek and hard peas for dinner. L. C. F. &c., see case 132, 5 in the house; very filthy. D. A. E. seized Monday Aug. 6th, locked up in his house alone all Monday night, died Wednesday Aug. 8th. C. or N. communicated with the Dunn's, saw George after death. Sarah Dunn, the younger, slept in Mac Donald's on Sunday night.

No. 156, *Mary Elkington*, aged 30.—R. cellar under 11, Pump-street. E. power-loom weaver. C. stout. N. S. not subject to a bowel complaint. P. C. very hearty, sober. E. C. had been taking sour veal broth, when the diarrhœa came on. L. C. F. &c., 3 in the cellar: cleanish: next door to a candle maker's cellar; no other nuisance near, street badly paved, dirty, moderately open, densely populous. D. A. E. seized Aug. 7th, at noon, recovered Aug. 12th, mild case. C. or N. she ascribed her illness to having attended Lydia Ditchfield, who lives in the house above, an unreported case of mild English cholera.

157, *Edward Bentley*, aged 70.—R. Hart-street. E. spinner. C. slender, tall and weakly. N. S. subject to an occasional attack of diarrhœa. P. C. half starved; depressed in mind, sober. E. C. had taken three gills of small beer. L. C. F. &c., see case 154. D. A. E. seized Tuesday 7th, 1 A. M. recovered Aug. 20th, mild case. C. or N. had waited on his wife the few hours she had been ill.

158, *Elizabeth Edge*, aged 80.—R. 17, Back Hart-street. E. supported by the parish. C. naturally stout. N. S. not ascertained. P. C. indigent, sober, asthmatic. E. C. no error of diet; alarmed at what had happened in the street. L. C. F. &c., see case 132, alone in the house, moderately clean. D. A. E. seized August 7th, 1 P. M. died August 8th, 1 A. M. C. or N. though living so near had communicated neither with Dunns or Mac Donalds.

159, *Anne Mac Donald*, aged 33.—R. Hart-street, but taken from a cellar in Holbrooke-street, Bank Top, where she had fled with her children. E. wife of case 155. C. strong, thick set. N. S. not ascertained. P. C. a drunkard, in want, good previous health. E. C. she had been guilty of the same excess as her husband (case 155) and eaten the same dinner; in the afternoon of Monday she took some castor oil, and the relaxation it produced passed on into rice-watery discharges. L. C. F. &c., see case 155. D. A. E. seized Tuesday morning, August 7, recovered August 16. C. or N. see case 155.

160, *Mary Anne Bentley*, aged 20.—R. Hart-street. E. daughter of case 157. C. moderately strong. N. S. none known. P. C. very indigent. E. C. grief and fear. L. C. F. &c., see case 154. D. A. E. seized August 7th, Tuesday, at 6 A. M. recovered August 20. C. or N. nursed her mother.

No. 161, *Sarah Dalton*, aged 66.—R. Acton-street, Bank Top. E. boo cleaner. C. very thin. N. S. subject to relaxation of the bowels. N. S. subject to relaxation of the bowels. P. C. a tipler, said to be very hearty. E. C. none known, no error of diet. L. C. F. &c., 4 in the house: street narrow, cleanish; a tripe-boiler at the back, D. A, E, seized Tuesday Aug. 7th, died Wednesday 8th, 10 A. M. C. or N. no known communication

162, *Charles Elkington*, aged 35.—R. cellar under 11, Pump-street. E. power loom weaver, husband of case 156, out of work. C. very slender. N. S. not subject to a bowel complaint. P. C. in excellent previous health; sober. E. C. none known. L. C. F. &c., see case 156. D. A. E. seized Monday morning, August 6th, recovered August 12th. C. or N. free communication with case 156, but neither of them characteristic cases.

163, *Anne Warwick*, aged 22.—R. 64, Back Lombard.street. E. tenter: in work. C. stoutish. N. S. subject to occasional relaxation. P. C. in weakly health, lived chiefly on tea. E. C. had supped on buttermilk the night before her attack. L. C. F. &c., 7 in the house, small, cleanish, open cess-pool, just below the window, conveniences thick together, and a double line; street ill-paved, filthy, swarming with inhabitants. D. A. E. seized in the factory, Tuesday Aug. 7th, 6 A. M. recovered Aug. 14th, mild case. C. or N. on the Friday week before Eliza, who worked at the opposite end of the same room was seized at 8, and died at 3 A. M. As this woman was leaving the room she just touched Warwick; no other communication.

164, *Thomas Whitehead*, aged 21.—R. Hart-street. E. spinner: in work. C. slender. N. S. not subject to a bowel complaint. P. C. very sober, respectable, not in want, in excellent health. E. C. none known; no fear of cholera. L. C. F. &c., house with 5 lodgers, exceedingly clean; street opposite decent, Back Hart-street, behind. D. A. E. seized Wednesday Aug. 8th, 7 A. M. died 9th, 2 A. M. C. or N. no communication whatever.

165, *John Kirwan*, aged 28.—R. 20, Tasle-street, middle floor. E. tailor. C. naturally strong. N. S. not subject to a bowel complaint. P. C. convalescent from a long illness brought on by a 3 weeks' drunken fit. E. C. had taken beef, veal, potatoes and buttermilk, with a voracious appetite. L. C. F. &c., street paved, narrow, filthy; room cleanish, 5 in it dirty; 17 in the house; convenience behind the cellar: contents of a main sewer before the door. D. A. E. seized suddenly as by a fit. Wednesday, Aug. 8th, 11 A. M. died Friday 10th, 2 P. M. C. or N. no communication whatever.

166, *Matthew Grimshaw* aged 63.—R. No. 34, Back Pump-street. E.

weaver. N. S. subject to diarrhœa. P. C. formerly a hard drinker, has a pulmonary affection. E. C. none known. L. C. F. &c., 4 in the house, clean, street narrow, in a court to the back 2 conveniences and an open cess-pool. D. A. and E. seized Wednesday, August 9th. 10th. P. M, recovered August 12th. C. or N. no communication whatever.

No. 167, *Anne Parker*, aged 29.—R. No. 8, Barton-street. E. frame tenter. C. stoutish. N. S. not subject to bowel complaint. P. C. out of health for some time. E. C. none known. L. C. F. &c., filthy-st., and house. D. A. and E. seized in the same factory as case No. 163, Wednesday, August 8th, recovered 14th. doubtful case. C. or N. spoke to Warwick after her seizure.

168, *Margaret Clayton*, aged 77.—R. Back Hart-street. E. helped in the house. C. naturally strong. N. S. subject to diarrhœa. P. C. sober, asthmatic, living on tea, in tolerable health. E. C. no known cause of the diarrhœa, had prolonged it by drinking putrescent butter-milk. L. C. F. &c., see case No. 132, 5 in the house, cleanish, next door but one to the convenience. D. A. and E. had had diarrhœa for a month, collapse Thursday, August 9th, died August 10th. C. or N. had had no communication with any cholera patient till after the diarrhœa, had been to see George Dunn, just within the door twice, the day before he died.

169. *Gerard Dalton*, aged 65.—R. Acton-street, Bank Top. E. a labourer in a foundry. C. lustyish. N. S. not subject to bowel complaints. P. C. a tipler in moderate health. E. C. sorrow and alarm. L. C. F. &c., see case No. 161. D. A. and E. seized Wednesday, died Friday, August 10th. C. or N. lay by the side of his wife after her attack.

170, *Anne Birch*, aged 44.—R. East-street. E. house-wife. C. lusty, florid. N. S. had a severe attack of cholera twelve months since. P. C. good general health, sober, respectable, suckling a very heavy child. E. C. none known, no error of diet. L. C. F. &c. a clean house, 2 adults and 5 children, street low, narrow, not far from the canal, yard behind pent up, 3 conveniences opening into one cess-pool. D. A. and E. seized at midnight, Thursday August 9th, died at 9 the following morning. C. or N. no communication whatever.

171, *Honor Flanagan*, aged 36.—R. No. 20, Tasle-street, middle floor. E. husband a shoe-maker. C. stoutish. N. S. had a very severe attack of bowel complaint last winter. P. C. in poor health, said to be sober. E. C. had eaten a rotten fowk for dinner the day of her attack. L. C. F. &c. see case No. 165. D. A. and E. seized with P. S. on Saturday morning, recovered August 21st. C. or N. she

had lifted Kirwan into bed twice, and washed his trousers, the smell of which turned her stomach.

No. 172, *Lydia Thomason*, aged 55.—R. cellar in a Court in Pump-street. E. tenter. C. weakly. N. S. not subject to diarrhœa. P. C. half starved, asthmatic, emaciated, sober. E. C. none known, no error of diet. L. C. F. &c. close court, two conveniences close to the window, very offensive: D. A. and E. seized Thursday, August 9th 6 A. M. recovered August 12th. C. or N. no communication.

173, *Mary Anne Tennant*, aged 34.—R. No. 29, Angel Meadow. Shoemaker's wife. C. spare. N. S. not subject to diarrhœa. P. C. in good general health previously, sober. E. C. none known. L. C. F. &c. 7 in the house, cleanish, no nuisance except the street itself. D. A. and E. seized August 9th, 2 P. M. the day of the procession: recovered August 13th. C. or N. no communication.

174, *Martha Aspinall*, aged 25,—R. No. 12, Dyche-street. E. foundryman's wife. C. pale, moderately stout. N. S. subject to jaundice. P. C. general health pretty good, sober, not indigent. E. C. taken ill while at Liverpool on an excursion, ascribed her illness to a peculiar smell on the shore there, had taken buttermilk in large quantities just before she began to complain. L. C. F. &c. street very filthy, badly paved, full of stagnant pools, strewn with vegetable and animal refuse, ordure, &c. moderately wide house, clean, 12 in it. D. A. and E. seized Thursday, August 9th, with P. S. in Liverpool, came back Friday, died Thursday following 10 A. M. August . C. or. N. neither at home nor in Liverpool had this woman seen any body ill of the disease.

175, *Thomas Vernon*, aged 56.—R. Foulk-street, Shepley-street, Bank Top, middle floor. E. joiner, father of cases No. 148 and 176. C. very stout. N. S. said not to be subject to diarrhœa. P. C. not an habitual drunkard, drunk to excess often on a Saturday night, laborious, in good previous health. E. C. was in the procession and supped with Buxton's men on the night of the Reform celebration day, came home drunk. L. C. F. &c. 5 in the room 2 adults, 3 children, very dirty, the mother a notorious drunkard. Foulk st. dirty but tolerably open. D. A. and E. seized Friday morning 7 A. M. died in the cholera van, at 8 P. M. August 11th. C. or N. his wife had been to Dunn's, in Back Hart-street, during Mrs. Dunn's illness. Vernon himself had rubbed his daughter Susannah, and she had slept in the same bed with him after her recovery.

176, *Susannah Vernon*, aged 20.—R. No. 56, Foundry-street. E. worked in a factory, sister of case No. 148, with whom she lived. C. moderately stout. N. S. not known. P. C. in good health, none

known. E. C. none known. L. C. F. &c. see case No. 148. D. A. and E. seized about 22nd July, recovered in a week, unreported. C. or N. no communication whatever.

No. 177, *Elizabeth Aspin, commonly called Crazy Bess*, aged 16.—R. Back Parliament-street. E. woman of the town. C. stoutish. N. S. subject to diarrhœa after drinking. P. C. alternately starved and drunk, often sleeping in the street. E. C. drunk on the Reform celebration day the day before her attack, cried passionately when Laurence was taken to the hospital. L. C. F. &c. for the locality see case 181. D. A. E. seized Friday, August 10th, at 11 P. M., recovered August 30th. C. or N. no known communication with Laurence nor any body else.

178, *Mary Burrows*, aged 52.—R. No. 5, Dyche-street, Angel Meadow. E. winder. C. rather delicate looking. N. S. not subject to diarrhœa. P. C. said she never had had a day's illness, a tippler, needy. E. C. had butter-milk for supper the preceding night. L. C. F. &c. seven in the house, no nuisance near except the street, which is muddy, and strewn with impurities. D. A. and E. seized on Friday, August 10th, at 3 P. M., died 11th, at $1\frac{1}{2}$ P. M. C. or N. no communication whatever.

180, *Henry Boam*, aged 33.—R. North Parade, Parsonage. E. fustian cutter. C. slight. N. S. not known. P. C. an occasional drunkard, good general health. E. C. he had not been well for 3 days previous to his attack, having been before that time drunk 4 successive nights. L. C. F. &c. a stable-yard with dung heaps, an ash heap, and a leaking water-closet pipe just opposite the door. D. A. and E. seized on Saturday morning, August 11th, died in 24 hours. C. or N. no communication whatever.

181, *Christian Laurence*, aged 50.—R. Back Parliament-street. E. woman of dissolute character. C. tall, lusty. N. S. subject to diarrhœa. P. C. a drunkard, but in good health. E. C. had supped on bad butter-milk the night before her attack. L. C. F. &c. street a flagged alley, inhabited only by depraved women: at the foot of Laurence's stairs a place where all impurities were thrown. D. A. and E. seized on Saturday, August 11th, at 4 A. M., died at 10 A. M. on Sunday. C. or N. no communication was traced.

182, *John Edwards*, aged 39.—R. No. 11, Cumberland-street. E. plasterer. C. slight. N. S. not subject to bowel complaints. P. C. sober, industrious, in good general health. E. C. on Friday had calves' head for dinner and supper, buttermilk likewise at supper, lost his appetite on Saturday. L. C. F. &c., a widish but filthy street, 5 in the same room, cleanish. D. A. E. seized Aug. 12th, 6 A. M. Sunday Morn-

ing, died 6 P. M. C. or N. no known communication with any other case except case 192, that was taken ill a few hours before him.

No. 183, *Anne Pears*, aged 54.—R. Portland-street. E. fruiterer. C. corpulent. N. S. subject to severe cramps. P. C. pretty good health, sober, depressed. E. C. had dined on salmon, and drank half a gill of sour beer at supper on the Friday. L. C. F. &c. street wide, at the door of the back yard a cess-pool and convenience that serves all Portland-court. D. A. and E. seized on Saturday, August 11th, at 1 A. M., recovered September 8th. C. or N. no communication with any other case.

184, *Anne Kirchen*, aged 32.—R. No. 90, St. James's-street. E. landlady of a beer shop. C. rather corpulent, fresh complexioned. N. S. has had an attack of bowel complaint almost annually. P. C. excellent general health, in good circumstances. E. C. the Friday before her first attack had tripe and porter for supper, the day before, currant pie, the day of her relapse she had fatigued herself and drank largely of butter-milk. L. C. F. &c. house clean, a large dunghill in Pickford's yard directly opposite. D. A. and E. seized on Saturday, August 11th, at noon, relapsed on the Thursday following, and had a second relapse, but recovered. C. or N. no traceable communication.

185, *Jane Barnes*, aged 40.—R. Dunnell's Court, Major-street. E. warper. C. delicate. N. S. subject to cramps in the stomach. P. C. in good general health, sober. E. C. none known. L. C. F. &c. four in the house, cleanish, court clean but close, a filthy yard along one wall of the house through which offensive impurities drain. D. A. and E. seized on Saturday morning, August 11th, at 8 A. M., recovered August 18th. C. or N. no traceable communication.

186, *Anne Spencer*, aged 70.—No. 3, Arcade-street. E. market gardener. C. small. N. S. had frequently suffered from diarrhœa. P. C. worn away with age, very sober, not poor. E. C. no known error of diet, had fatigued herself on the Friday and Saturday. L. C. F. &c. house looking into the market, very airy, comfortable, a quantity of refuse vegetable matter left to decay on the pavement of the market, in an entry near a large intolerable open cess-pool. D. A. and E. seized on Saturday afternoon, August 11th, died on Sunday at 4 A. M. C. or N. no traceable communication.

186,B *Alexander Whirk*, aged 35.—R. Court in Deansgate behind Helsby's. E. market gardener, formerly a sailor. C. slender. N. S. subject to diarrhœa after a fit of intemperance. P. C. a sot, of the most irregular habits, not indigent. E. C. no known cause of the diarrhœa except intemperance, but the night before he died he was struck

with a poker in a quarrel, and collapse came on immediately afterwards. L. C. F. &c. a small yard behind a plumber's with lofty buildings all round it, under and behind one side of the house are the stables and dunghill of the Pack Horse Tavern, from which arises an intolerable stench. D. A. and E. diarrhœa for a week, August 11th, collapse on Saturday evening, died the following day. C. or N. no ascertainable communication.

No. 187, *John Ward*, aged 31.—R. Cellar under Oldham-street. E. fustian cutter. C. stout. N. S. not subject to a bowel complaint. P. C. in perfect health previously, said to be sober. E. C. none known that could excite the premonitory symptoms, but became suddenly worse after drinking a great quantity of butter-milk. L. C. F. &c. cellar with a mangle in it, four beds and seven lodgers, no nuisance near. D. A. and E. seized with P. S. on Saturday, August 11th, at $10\frac{1}{2}$ A. M., died on Sunday, at 7 P. M. C. or N. no communication whatever.

188, *John Macrea*, aged 60.—R. row of houses overlooking the river behind Parsonage, near St. Mary's. E. bill sticker. C. delicate. N. S. not subject to a bowel complaint. P. C. a tippler; embarrassments preying on his mind; in indifferent health. E. C. none known, no error of diet. L. C. F. &c., a mere closet of a house with 6 in it, no bed, clean, the situation elevated, airy, but overlooking the river, a cess-pool near, the effluvia from which were intolerable. D. A. E. seized Saturday Aug. 11th, 7 A. M. died the 13th. C. or N. no communication whatever.

189, *William Hudson*, aged 40.—R. cellar, No. 10, Chadwick's-court, Ashton-street, Bank Top. E. weaver, not in work. C. stoutish. N. S. subject to diarrhœa. P. C. sober, had had typhus fever twice, and only discharged from the Fever Wards a week before his attack. E. C. had been drinking buttermilk and tart beer before his first illness, the exciting cause of his fatal relapse unknown. L. C. F. &c., cellar surrounded by impurities to which he himself ascribed his typhus fevers, his health had been good before he resided in this cellar. D. A. E. seized Wednesday Aug. 11th, with ambiguous symptoms, 11 A. M. discharged cured Aug. 11th, brought into Hospital again the following morning in collapse, and died soon after, Aug. 13th, 2 A. M. C. or N. out of the hospital this man had no communication with a cholera case; in it he slept the first night next to a man who died in the course of that night, he was afterwards removed into the Convalescent Ward.

190, *Sarah Fish*, aged 36.—R. 20, Tasle-street, opposite case 171. E. works in a factory. C. fat, ruddy complexioned. N. S. not ascer-

tained. P. C. a drunkard, half starved, general health good. E. C. was drunk the night before her seizure, had curds and whey an hour or two before she began to complain, terrified at the occurrence of cases so near. L. C. F. &c., the same street as case 171, an impure stream running down the middle collects between this house and Kirwan's; there is, too, a grid up which the contents of the main sewer escape. D. A. E. seized Sunday 4 P. M. Aug. 12th, died Aug. 16th, 5 P. M. C. or N. had had no communication whatever with any of the cases near or distant.

No. 191, *Alice Robinson*, aged 77.—R. Do. cellar under Kirwan's. E. helped in the house. C. thin. N. S. not subject to a bowel complaint. P. C. said to be sober, hearty for her age. E. C. had eaten nearly a quart of bad gooseberries the night before her attack. L. C. F. &c., the same street as case 171 : two in the cellar, clean. D. A. E. seized Sunday, Aug. 12th, 4 A. M. died Aug. 13th, 9 $\frac{1}{2}$ A. M. C. or N. though this old woman and another lived together under Kirwan, both they and all the inmates declared that there had been no communication between Robinson and the others.

192, *Jane Edwards*, aged 40.—R. 11, Cumberland-street. E. wife of case 182. C. delicate, little. N. S. subject to a bowel complaint. P. C. sober, industrious, good general health. E. C. on Friday partook of the same meat as her husband, (case 182.) L. C. F. &c., see case 182. D. A. E. seized Saturday Aug. 11th, 1 $\frac{1}{2}$ P. M. died Sunday $\frac{1}{4}$ before 9 A. M. C. or N. no communication with any other case.

193, *John Branhan*, aged 50.—R. 1, Fetter-lane, Hart-street. E. silk weaver. C. small, spare. N. S. had once very nearly died of English cholera. P. C. in good health, not poor, said to be sober. E. C. had drank freely on Saturday night of low priced beer. L. C. F. &c., 9 in the house, clean and comfortable, street very narrow; behind the house 3 conveniences near each other. D. A. E. seized Sunday 4 A. M. Aug. 12, died 4 P. M. C. or N. no communication with any other case.

194, *Anne Thompson*, aged 31.—R. 147, Deansgate. E. barber's wife. C. corpulent. N. S. not subject to a bowel complaint. P. C. a drunkard; in good previous health. E. C. was drunk at the time of her seizure. L. C. F. &c., 2 in the room, abominably filthy, a dark yard behind, built up all round, a cess-pool close to it. D. A. E. seized 3 P. M. Sunday the 12th, recovered 17th. C. or N. a man named John Monks had died suddenly in the house the day before her attack under circumstances that made it doubtful whether his was a case of cholera or not. Thompson nursed and laid him out. She ascribed her illness to receiving his breath, which she said had a curious smell.

No. 195, *James Kelly*, aged 49 —R. Whitehead's Court, Tib-street. E. weaver, out of work. C. stout, strong. N. S. not subject to a bowel complaint. P. C. never had a day's illness in his life before, occasionally drunk, not in want. E. C. none known, no error of diet. L. C. F. &c. very narrow court, 5 cess-pools open into an entry leading to it, they often could not eat their meals for the stench, 5 in the house. D. A. and E. seized Sunday morning, August 12th, died Tuesday 14th, 5 P. M. C. or N. no communication whatever.

196, *Andrew Shannon*, aged 55.—R. No. 3, Back Simpson-street, Angel Meadow. E. bricksetter. C. stout. N. S. not subject to a bowel complaint. P. C. formerly a drunkard, half starved, said to have very good previous health, "sound as a rock." E. C. the night of his seizure after fasting for many days eat voraciously, and drank ale and rum on the occasion of his wife's funeral. L. C. F. &c., a close court, a cess-pool three doors off, 5 in the house, habits excessively filthy. D. A. and E. seized at midnight, August 12th. died the following morning. C. or N. no communication, his wife had been buried the day of his seizure, but she had not died of cholera.

197, *William Hall*, aged 50.—R. Court in Major-street. E. foundry-man. C. small, thin. N. S. not subject to a bowel complaint. P. C. in excellent health, a tippler, poor. E. C. was sober the night before his attack, but drunk the 3 nights before, he went on Sunday morning to see Branhan put into the van. Branhan was moribund, and the sight terrified him. L. C. F. &c. 3 in the house, this a sort of closet, pent up by other houses, with a cess-pool near the door. D. A. and E. seized 7 A. M. Monday morning, August 13th, recovered Wednesday, August 15th. C. or N. no communication, but that already mentioned.

198, *Hannah Johnson*, aged 22.—R. Back Parliament-street. E. woman of the town. C. lusty. N. S. not subject to disordered bowels. P. C. a drunkard, but said to have excellent health. E. C. on Sunday had calves' head for dinner. L. C. F. &c., assisted at the Tom and Jerry shop at the top of the street, just opposite : 2 insufferable conveniences which serve all the street. D. A. and E. seized with P. S. on Monday, August 13th, collapse on Tuesday evening, died 15th, 2 P. M. C. or N. had no ascertainable communication with any one ill of the disease.

199, *Ellen White*, aged 30.—R. No. 88, Fleet-street, middle room. E. reeler. C. rather delicate, slender. N. S. subject to relaxation of the bowels. P. C. greatly reduced, half starved, said to be sober, in tolerable health. E. C. no cause for the first uneasines in her bowels, but this was greatly worse after taking a dinner of beans and

bacon. L. C. F. &c. 16 in the house: 5 in Ellen's room, street dirty, narrow, densely populous, a convenience with an open cess-pool just under the window to the back. D. A. and E. seized with P. S. 2 or 3 days before, fell down at her work on Monday 13th, recovered, August 22nd. C. or. N. no known communication.

No. 200, *James Hatton*, aged 53.—R. Press-house steps, Parsonage Lane. E. carter. C. slight but strong. N. S. subject to a bowel complaint. P. C. general health good, not an habitual drunkard. E C. drunk on the Reform Celebration Thursday and not quite sober after till the day of his seizure, had eaten heartily of stew and whimberry pudding from a cook's shop. L. C. F. &c. Press-house steps, a steep narrow zig-zag descent to the river-side, a cess-pool at the angle, another at the bottom very offensive, 4 in the house, cleanish, the room suffocatingly hot from a bake-house below and a coffee roaster's above. D. A. & E. seized 4 P. M. Tuesday, August 14th, died Wednesday, August 15th, 3 P. M. C. or N. no communication.

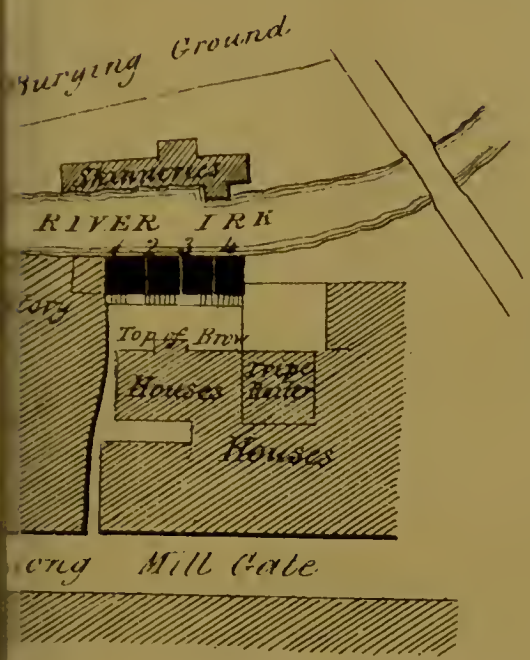
ERRATA.

P. 5, line 1. for particular, read *practical*.
P. 150, line 10, for one or more, read one *dram* or more.

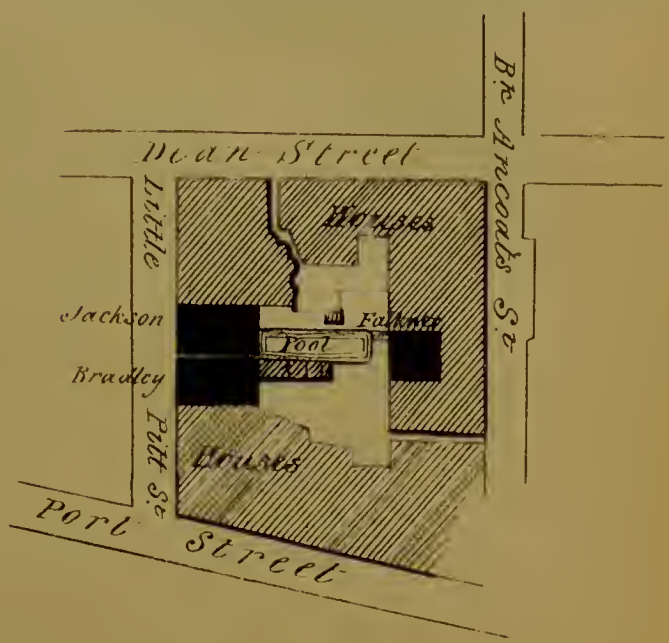
HARRRISON AND CROSFIELD, PRINTERS, MANCHESTER.

LOCALITIES OF CHOLERA.

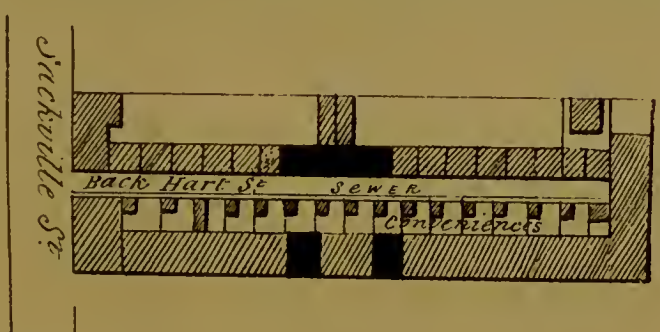
Nº 1.
PLAN OF ALLENS COURT



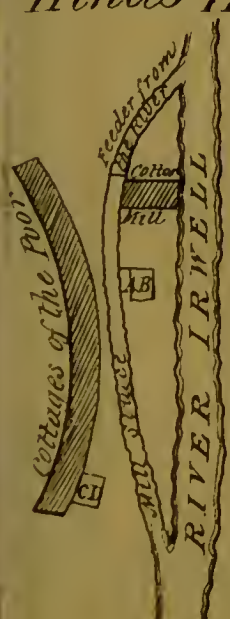
Nº 2.
PLAN OF FALKNER'S COURT



Nº 3. PLAN OF BACK HART STREET



Hinds Hamlet.



Nº 5. Cholera in Warrington.

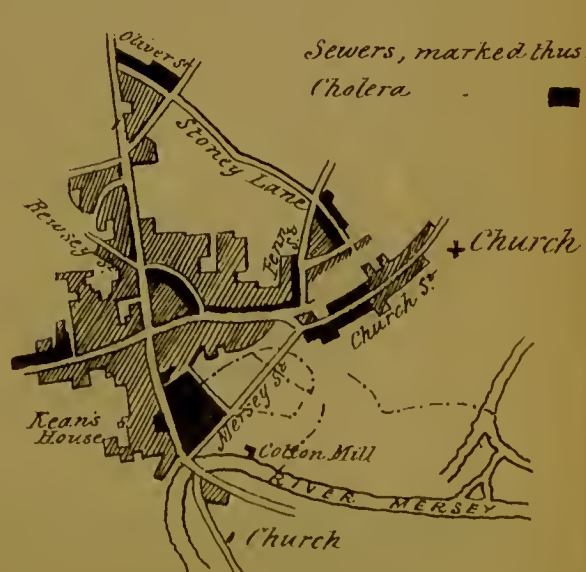


CHART
shewing the succession, place & mode of origin
of the FIRST 200 CASES of the
Cholera in Manchester
T. Physick lith. 90 King St. Manch.
EXPLANATION.
Spontaneous Cases marked thus ●
Equivocal D.o D.o ⊙
Contagious D.o D.o ○
Imported D.o (barren) D.o +
SALFORD
NEW BAILEY
RIVER IRWELL
River Irk
SWAN STREET HOSPITAL
KNOT MILL HOSPITAL
RECEPTION HOUSE
Little Ireland
Collyhurst
Gibraltar
Allens Court
Bedford's Court
Long Millgate
Todd Lane
Shude Hill
Shude Hill Market
Withy Grove
Oldham Road
George Leigh Street
Jersey Street
Oldham Street
Piccadilly
Infirmary
Market Street
Mosley Street
Portland Street
Oxford Road
London Road
Granby Row
Deansgate
Bridge Street
King Street
Peter Street
Lower Mosley Street
Bridgewater Street
Water Street
Quay Street
Parsonage
College Lane
Ancoats Street
Great Ancoats Street
Newton Street
Port Street
St. Georges Road
Canal St.
Pollard Street
Irwell Court
Parliament Street
Cannon St.
Millers Lane
Swan St.
St. Anns Sq.
Exchange
Shambles
River Medlock
Rochdale Canal
Ashton Canal
Pump St.
Shepley St.
Wakefield St.
Hulme St.